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2016 Engineers Week
February 21 – 27
Chairperson’s Message

by Helga Christoforatos - Director of Marketing
Miller Electric Company

“Engineering is the art of directing the great sources of power in nature for the use and convenience of man.” Thomas Tredgold, Civil Engineer

Most people don’t see the influence engineering has in the world. They don’t think of the engineer that applies materials science to improve construction materials to build our infrastructure. They don’t think of the transportation engineer that designed the roadway they drive on to get home each day. They don’t think of the biomedical engineer that designs the devices that are used in various medical procedures. Or the structural engineer that designed that “really cool bridge” they see from the distance across the river. To the people that are not directly involved in it, engineering is somewhat of an invisible industry, but the contributions that engineering brings to our society are tremendous. Engineering touches almost every aspect of our lives. Welcome to North East Florida’s Engineers Week 2016.

Engineers Week was established in 1951 by the National Society of Professional Engineers to raise awareness of the engineer’s positive contributions to the quality of life. It is the time of year where everyone involved in engineering and construction management takes some additional time to encourage young people to consider careers in the field. Engineering societies host events such as Mathcounts, Engineering Merit Badge for Boy Scouts, and ACE Mentoring Program. Local companies and societies awards scholarships to high school and college students to aid in their careers and contribute to their future.

It has been an honor serving as chair this year. I want to thank everyone in the E-Week Committee for their hard work and dedication, and all the societies for their support in making E-Week a success year after year.

American Concrete Institute (ACI)
American Public Works Association (APWA)
American Society of Civil Engineers (ASCE)
American Society of Highway Engineers (ASHE)
American Society of Mechanical Engineers (ASME)
American Water Resource Association (AWRA)
American Water Works Association (AWWA)
Design Build Institute of America (DBIA)
Engineers Without Borders (EWB)
Florida Association of County Engineers and Road Superintendents (FACERS)
First Coast Manufacturers Association (FCMA)
Florida Engineering Society (FES)
Florida Structural Engineers Association (FSEA)
Florida Transportation Builders Association (FTBA)
Florida Society of Surveyors and Mappers (CROWN FSMS)
Florida Water Environment Association (FWEA)
Institute of Electrical and Electronics Engineers (IEEE)
Institute of Transportation Engineers (ITE)
North East Florida Builders Association (NEFBA)
National Utility Contractors Association (NUCCA)
Society of Military Engineers (SAME)
Society of Marketing Professionals (SMPS)
Society of Women Engineers (SWE)
US Green Building Council, North Florida (USGBC NF)
Women’s Transportation Seminar (WTS)
PROCLAMATION

WHEREAS: In 1951, the National Society of Professional Engineers first recognized National Engineers Week in conjunction with George Washington's birthday and acknowledged our first president as the nation's first notable engineer and surveyor; and

WHEREAS: Since that time, American engineers have used their scientific and technical knowledge to meet the needs of an increasingly complex society in creative, innovative and environmentally conscious ways; and

WHEREAS: The various engineering professions provide citizens with a number of necessities, including the design and construction of industrial facilities, delicate medical instruments, computer software, mechanical systems, water systems, and electrical transmission and distribution systems; and

WHEREAS: Historically, engineering professionals have been active partners in maintaining and ensuring high-quality educational experiences and continue to emphasize, promote and facilitate math and science training for our youth; and

WHEREAS: Engineers lead and address the technological challenges of our times, including researching sustainable energy sources, studying new methods to improve safety and grow the nation's global communication abilities into the 21st century; and

WHEREAS: Jacksonville acknowledges and relies on engineers to leverage their knowledge and skills to meet the demands of our future, not only here in northeast Florida, but also around the world.

NOW, THEREFORE, I, LENNY CURRY, by virtue of the authority vested in me as Mayor of Jacksonville, Florida, do hereby proclaim Feb. 21 through Feb. 27, 2016, as

NATIONAL ENGINEERS WEEK

In Jacksonville and urge all citizens to recognize the far-reaching contributions engineers have made and the tremendous impact they will continue to have on our lives.

In witness thereof, this 16th day of February in the year two thousand and sixteen.

Lenny Curry
Mayor

CITY OF JACKSONVILLE, FLORIDA
A world-class aquarium in Jacksonville, managed as a sister-facility of Jacksonville Zoo and Gardens is still a dream, but the project continues to gain interest and momentum thanks to the effort of the advocacy group AquaJax. According to a comprehensive and extensive feasibility study sponsored by high-powered, community stakeholders, the project will produce hundreds of jobs and far-reaching, positive economic growth. With an approximate $100 million investment, the region will see more than a billion dollars’ worth of impact over ten years.

An exciting, engaging, enjoyable experience will be the key ingredient to making the First Coast Aquarium the region’s premier attraction. An instantly iconic, breathtakingly beautiful design will set Jacksonville apart and draw guests from all over the world. Charismatic, interesting species featured in enriched habitats and interactive exhibits within a unique, landmark structure, plus spaces for special events, and a river cruise between the aquarium and the zoo, are all being considered.

As a responsible business partner, the First Coast Aquarium will be a good steward of our natural resources. Our aquarium will be LEED-certified for green-building practices, with Florida-friendly gardens, and a robust reuse and recycling program. Preliminary discussions with energy experts have touched upon clean technologies like photo-voltaic arrays and cogeneration features that will be incorporated in the building’s design.

Our aquarium will engage and educate families, students and visitors from the southeast and beyond. People of all ages will delight in learning about and encountering the natural wonders of our region. From schoolchildren to grad-students, the aquarium will offer classes, camps and field trips intended to build a sense of curiosity about diverse aquatic habitats and ecosystems, and encourage interest in biology and ecology. We will also be closely involved with university staff by integrating our facilities with the region’s internationally-renowned marine sciences programs.

We will lead the way by organizing beach clean-ups, and wildlife events. By teaming with FWC and USFWS we will advance sea turtle and manatee response efforts to preserve our ecological treasures for all of us and for future generations too. We will be leaders in the aquarium community’s sustainable husbandry initiative by breeding rare animals cooperatively and helping save threatened Florida species such as the endangered Goliath Grouper.

As the regional leader for animals-in-human-care, Jacksonville Zoo and Gardens is North Florida’s most popular paid attraction with almost 850,000 visitors in 2015! JZG brings a century of experience in the not-for-profit sector, raising awareness and building community support.

Please let your local and state elected officials, city agencies, cultural institutions and business leaders your thoughts on the prospect of making the First Coast Aquarium a reality.
As the owner and manager of Jacksonville’s public seaport terminals, JAXPORT is committed to the ongoing enhancement of port infrastructure and facilities. There are a number of major growth projects in progress in and around the port.

JAXPORT and the U.S. Army Corps of Engineers continue to make progress on the Jacksonville Harbor Deepening Project, which will take the federal channel to 47 feet and allow JAXPORT to become a first/last port of call for the industry’s larger ships. The project will soon head into the construction phase.

JAXPORT’s $30 million Intermodal Container Transfer Facility at Dames Point will be operational later this year, enabling the direct transfer of containers between vessels and trains. The new facility will complement existing on-dock rail at JAXPORT’s Talleyrand and Blount Island terminals and further enhance the competitiveness of the adjacent TraPac Container Terminal.

In addition, a proposed cross-county rail connector on Jacksonville’s Northside will link to JAXPORT’s ICTF, as well as the Blount Island and Dames Point Marine Terminals, and help facilitate the flow of goods by saving time and bypassing congested areas of the city.

JAXPORT continues a comprehensive infrastructure revitalization program to rebuild docks and rail at both Blount Island and Talleyrand Marine Terminals. This well-designed, phased reconstruction allows operations to continue while fortifying the terminals for future growth.

Three new state-of-the-art 100-gauge container cranes will soon be delivered to Blount Island Marine Terminal and will enter service in mid-2016, joining the larger cranes already in use at JAXPORT’s TraPac Container Terminal.

As one of the nation’s largest vehicle handling ports, JAXPORT also continues to plan for increased auto capacity and processing this year and beyond.

Learn more about JAXPORT’s major growth projects at JAXPORT.com/projects.
new data released in January 2016 by the U.S. Department of Transportation’s (USDOT) Federal Highway Administration (FHWA) shows that U.S. driving reached 2.88 trillion miles by the end of November, making it likely that U.S. drivers will make 2015 the most heavily traveled year in history.

Florida is a key location for drivers and Northeast Florida is a gateway to the Sunshine State. It is likely Florida continues to build on its reputation as a prime location for travelers, industry, families and workers.

With a record number of visitors as well as the increase in industry and businesses, it is also prime time for high school students to pursue careers in the transportation builder’s industry.

The partnership between many agencies spearheaded by the Florida Department of Transportation, the Florida Transportation Builders Association and the Federal Highway Administration enhances opportunities for students to consider a career in construction. That’s why the Construction Career Days program began.

This effort is what drives Florida Department of Transportation’s Northeast Florida District and its partners as an increase in construction continues in the area – with an emphasis on short-term inconvenience for a long-term solution for motorists.

The career event is designed specifically for young people to acquaint them with career opportunities. Partnerships with area engineer consulting and construction companies are the backbone of the career days.

Our young people are the building blocks and highways to the future of transportation. They are needed now to be involved and learn from those who paved the way.

The third annual Construction Career Days 2016 event in Northeast Florida is scheduled for April 5–7 at the Equestrian Center in Jacksonville.

FDOT District Two, Northeast Florida, Secretary Greg Evans commends the efforts of partners, sponsors and participants in the various construction career days events, including the fundraising for student scholarships.

“The construction career days events allow students to see all the opportunities the world of transportation has to offer them as they move into their adult careers and look for future employment,” state Evans. “As we ride our roads and see the construction projects we really don’t understand and appreciate everything that goes into our total transportation program.”

According to Carrie Stanbridge, District Two construction engineer, construction is fun, no matter what you do. It’s what you make it as she advises students. There are so many opportunities in our industry, in transportation, in infrastructure.

The Northeast Florida Construction Career Days Program expanded efforts in 2015 to incorporate a mini-event at Camp Blanding Joint Training Center for Youth ChalleNGe cadets who graduate before the next main event.

Scott Lent, an FDOT resident engineer in Northeast Florida talked about the success of the min-event. “We are introducing the students here, as part of this class, to the construction and transportation industries by doing some hands-on learning and giving them experience to the asphalt, concrete and surveying opportunities within the industry.” These cadets will not have the opportunity to attend the main event. This event provides them exposure to the transportation community and opportunities while providing the opportunity to apply for a scholarship.”

Youth Challenge Academy Cadet Charlotte Griffith – when asked about the mini-construction career days event at Camp Blanding and the opportunities for a career, she reflected on her thoughts about bridge construction. “I remember going over bridges when I was really little, and I would see the huge pillars and I would just be like … how did those get there? Getting to see the size of the drills that they use – and the teeth on those drills – it was insane. Getting to see like, depending on the job you take, how much you might get paid. It was like WOW, I never realized you would get like, a big paycheck and it was so much more than just building a house, or building a simple thing, that it was actually, really more like an art.”

With the increased construction practically everywhere in Northeast Florida many “artists” and a need for many more. Janet Duffy with Eisman & Russo,
Inc. and co-chair of the Northeast Florida Construction Career Days committee, reiterated to the cadets in mass formation: “We want to wish you every bit of luck in the future. Construction has the room for you.”

The 2016 event is expected to be an increase in the number of schools and students attending the three-day, with more than 1,000 students attending their designated days. There were eight counties in District Two participating in 2015. Ten counties are scheduled to participate in 2016.

“The event shows not only the opportunity for students who plan to go to college but it also shows opportunity for those students who want to learn a trade and develop a career within the trade,” adds Lent, co-chair of the Northeast Florida Construction Career Days committee.

According to Lent, the scholarships are an even bigger motivator for students with plans for college or those who are looking at going to a vocational school to develop a long-term career in the construction or transportation industry.

Sixteen scholarships were presented to students who attended the 2015 main event and applied for one.

The 2015 event was a success according to planners and those who attended. Plans are in place to continue growing the effort in 2016.

Career Specialist Linda Krepp, St. Johns Technical High School, attended the 2015 event and commented that her students truly enjoyed the Construction Career Days. “The event really opened their eyes to the field of construction and future employment opportunities.”

Another example of the favorable event comes from Linda Moses Columbia High School. “Thank you so much for inviting Columbia High School to your amazing ‘Construction Career Day’ event today. Columbia High School students and teachers had a terrific time. The students loved experiencing the construction equipment, the learning labs, the career workshops, and job opportunities. It was a first-class event!


Information about the Construction Career Days is available at www.nficcd.com
Engineers are problem solvers. And, as local industry leaders will tell you, so are UNF’s engineering students. Whether it’s tweaking a process or creating a new product, more than 70 senior mechanical and electrical engineering students are currently working with local businesses to find solutions to real-world problems.

Associate professors Paul Eason and Alan Harris lead the mechanical and electrical engineering Senior Capstone Design program which this year consists of 16 teams working with companies like Johnson & Johnson Vision Care, Inc., Saft, Medtronic, ICS, Gerdau Ameristeel, Inspired Energy, Gem Products as well as the Jacksonville Zoo and a couple internal units on campus. Each company funds supplies and materials for the projects.

One team is designing a handheld device to read the analytics of large industrial batteries, while another is trying to automate a manual process that can be ergonomically unsafe. Others are adjusting designs in manufacturing settings to improve production.

Chase Kuehner, whose team is working on a scanner to accurately measure warehouse dimensions, said they appreciate the opportunity to not only share the wealth of knowledge they have received at UNF, but to gain experience in their fields. “We are refining our skills to plan, organize, conceptualize and problem solve,” he said.

Each team is made up of both mechanical and electrical engineering students. At the start of the course, participants take a “Myers-Briggs” personality test and submit their results and project preferences. Teams are assembled based on the results in an effort to maximize teamwork.

No one knows this better than Skylar Stroman, who graduated in May with a degree in electrical engineering. Stroman participated in the Capstone Design project last year and not only gained important skills, but a job, as well.

Stroman remembers being approached by industry leaders at Innovation Day, when the teams gave their final presentations. He said it was almost like an informal interview. A few days later he received a job offer.

Now an electrical engineer at Saft, Stroman believes the Senior Capstone Design program is one of the “crown jewels” of the College.

“The program allows you to see what working as an engineer is really like. In addition to the engineering itself, it exposes you to the other aspects of the job - deadlines, communication, justifying decisions, working with partners and giving presentations,” Stroman said.

He said the team environment is particularly important, because while you may want to work on projects and solve problems on your own, that is not how it is in the real world.

“In the industry, you are always working on a team. You realize that you can’t do it all yourself,” Stroman said. “You have to trust and rely on others.”

The program spans the fall and spring semesters, and the teams work frequently on their projects. They submit weekly progress reports, and meet regularly with Eason and Harris to talk through challenges.
While both professors have led senior projects in the past, this is just the second year of the interdisciplinary partnership with industry support, and its popularity is clear. “There is a great demand for our students,” said Eason, who mentioned that there are more projects than students to fill them.

“Students need to learn how to do this stuff,” he said. “But to learn it in a real-world setting while the company is getting their problems solved, provides a huge benefit to everyone.”

Eason and Harris both gain from the program as well. “It’s always so rewarding to mentor students in a very active way and send them out better prepared for professional practice,” Eason said. “It’s one of the most rewarding things I’ve done.”

Many other senior projects are ongoing in the College, like in civil engineering, where, for the past six years, students have worked on large-scale projects under the leadership of associate professor, Chris Brown.

Boy Scouts
Engineering Merit Badge

As part of Engineer’s Week we have a sub-committee that organizes a community outreach program annually. Our program is to put on an Engineering Merit Badge Workshop for the Boy Scouts of America. The event is currently being held at the University of North Florida and we just celebrated our 10th year. UNF is very generous to us and opens their robotics lab each year to be part of the event. This year Johnson & Johnson opened their 3D printer lab and allowed everyone to take a tour of it. Scouts from all over North Florida, and sometimes South Georgia and Central Florida attend this event. This year we had 126 scouts attend, which is our full capacity. Over the past 10 years we have had more than 1,100 participants. The Merit Badge Workshop is promoted on the Boy Scouts North Florida Council website here in Jacksonville. We look forward to it each year and enjoy helping this group achieve their goals!
Complete Streets

JTA Transit Overhaul Leads to Focus on Roadway Environment

by Brad Thoburn and Fred Jones

In 2014, the Jacksonville Transportation Authority (JTA) implemented a complete transit system redesign, known as the Route Optimization Initiative (ROI), overhauling its 43-year old system to be more frequent, direct and reliable. For years, the system spread resources thinly across the county, routes meandered through neighborhoods and schedules were poorly coordinated.

ROI focused higher frequency and more direct service on key corridors. The idea was that we could ask customers to walk an extra block or two and in return they would get a bus more often, the route would be faster and transfers easier. As a result, the number of routes with 20 minute frequency increased from two to 20 and ten routes with 15 minute frequency were introduced. This was accomplished at no additional recurring operating costs.

ROI has been a success. Ridership increased 6 percent in the first year. Most major changes (let alone complete overhauls) result in reduced ridership initially and at the same time many of JTA’s peers were seeing declines in ridership due to low gas prices. But there is another piece to JTA’s effort to upgrade its system. More than 90 percent of JTA customers walk or bike to a bus stop. So the path to the stop is critical. Transit agencies must consider the trip before the trip, or what is known as the “first and last mile”. Not doing so would be like a port not worrying about how cargo gets to the docks.

To complement to ROI and address the first and last mile issue, JTA launched a Complete Streets-based, infrastructure enhancement known as the Mobility Corridors program. The identified corridors represent JTA’s newly deployed, high frequency transit routes. The program is intended to strike a balance between all the functions of a street, putting people and quality of place first, with the recognition that streets can play a major role in improving access to the transit system while also improving safety, public health, economic development and livability.

Transit access is a central part of the program. The range of improvements include, but are not limited to: sidewalks/bike lanes; shared routes; restriping; streetscaping and lighting; crosswalks and signalization; curb extensions/bulb outs; reduced curb radii; mid-block crossings/pedestrian refuge islands; “road diets”; and roundabouts.
Safety is also the chief objective of the Mobility Corridors program. According to the 2014 “Dangerous by Design” report published by Smart Growth America, Florida has the top four metropolitan areas on the list of most dangerous large metro areas for walking in the United States: 1) Orlando-Kissimmee, 2) Tampa-St. Petersburg-Clearwater, 3) Jacksonville, and 4) Miami-Fort Lauderdale-Pompano Beach. In cities that have largely developed around the automobile, transportation planning has tended to focus on adding auto capacity without fully considering the needs of pedestrians and bicyclists. And in cities like Jacksonville, where the climate is favorable to cyclists and pedestrians, our infrastructure regretfully has not always been so inviting.

Complete Streets is truly a national movement that aims to reverse that trend of auto-only roadway solutions. The recently enacted Federal Transportation Reauthorization (FAST Act) is the first federal transportation bill to include language on Complete Streets. The Florida Department of Transportation adopted a Complete Streets policy in 2014 and the 2015 Florida Transportation Plan Policy Element highlights the need for a “safer environment for pedestrians, bicyclists, and other vulnerable road users” and makes it a key goal to offer more transportation choices for people. The City of Jacksonville has established a Context Sensitive Streets Committee and is committed to making roads safer.

Despite the link between transit and the pedestrian environment, JTA appears to be the first and only transit agency with its own Complete Streets program. Over the past four months, the JTA has conducted a series of planning and design workshops with the community and other stakeholders to identify immediate, mid-term and long-term improvements designed to maximize transit and multimodal accessibility and safety.

We know demand for projects will far outpace initial funding. Still, small scale enhancements on all corridors with a number of keystone projects will demonstrate the transformative potential of such investments. Our long term goal is to identify funding partnership opportunities and have these projects established as priorities as federal, state and local funding become available. These investments, often relatively small, can have major benefits and improve the quality of life in our community.
Since its establishment in 2006, the ACE Mentor Program of Northeast Florida has touched the lives and made a big difference for many in our local communities. The program’s mission is to engage, excite and enlighten high school students to pursue careers in the integrated construction industry through mentoring; and to support their continued advancement in the industry through scholarships and grants.

In 2014-2015, the program included three local high schools – Lee High School, Middleburg High School, and Orange Park High School in both Duval and Clay Counties. Additionally, we added a team of Homeschool students which met at the offices of two of our supporters, Auld & White Constructors and TLC Engineering for Architecture. This year, we added Creekside High School in St. Johns County. The multifaceted program includes college advice, field trips, and hands-on projects.

With oversight from mentors, teams of students design a hypothetical project in response to a Request for Proposal and present the project to a “Selection Committee” – teachers, students, mentors, parents, and industry professionals – at a year-end event. In addition to our traditional program, ACE of Northeast Florida is in our fourth year having National Competition teams. We are proud to say that our Orange Park High School National Competition team in 2014-2015 was one of three finalists selected from across the country to present their project in Washington, D.C.

We had an extremely successful year with approximately 73 students and 48 mentors working together to create the exciting projects that were presented at our End-of-Year Presentations and Scholarship Awards luncheon on May 15, 2015. We were able to award $15,500 in scholarships for our students this year, thanks to the generosity of our professional and private donors. Since its establishment in 2006, ACE Mentor Program of Northeast Florida has awarded over $130,000 in scholarships to deserving seniors choosing to pursue careers in the industry. With the addition of Creekside High School to our program this year, we are anticipating approximately 100 students to participate in the program.

We thank all of our students, parents, teachers, mentors, and Board Members and look forward to expanding our program and reaching more students in the local community in the years to come. The diligence and dedication our students have for the program gives us great hope for the future of the Architecture, Construction and Engineering industries.

ACE’s local affiliate is 100% volunteer; professional mentors and Board Members selflessly donate their time. Financial support and mentors stream from local architecture, construction, and engineering firms, as well as professional societies and construction industry organizations. All financial support goes straight to affect the lives of students.

If this article has piqued your interest and you would consider donating your time or finances to supporting ACE, please contact us! The program always needs more mentors and we would love to plug you in and allow you to share our enthusiasm for our profession. Please e-mail us at NortheastFL@acementor.org or check out our Web-site at http://www.acementor.org/index.php/affiliates/florida/northeast/about-us/
Funding for international development community programs is a challenge with little room for waste on labor force efforts, materials and time that requires project design and construction to be exceptionally efficient. Working in rural terrains has its particular set of difficulties that combined with limited funding, construction materials and equipment, increases the challenges for a successful project. Safety of workers, last mentioned but definitely not least important, is also a consideration that presents a challenge and is directly related to quality of design, the resources and its construction.

Installation of water pipelines along steep, uneven routes in mountainous terrain often include ravines too steep for open cut methods. Water main routes should be chosen to avoid these ravines, when possible. However finding longer, less steep routes to circumvent ravines, may require larger quantities of more costly pipe material, than what would be needed for suspension crossings. With limited equipment capabilities, laborers, all though with ever such passion deliver what force is needed to meet their needs, are exposed to higher safety hazards whenever they are digging longer trench paths to accommodate for limited design options. An aerial suspension crossing could make or break your budget, as well as your constructability, and result in excessive cost of materials as well as excessive design labor hours spent for over-design. An engineering decision weighing all of these options must be made, with several factors in mind, such as project budget, cost and availability of materials, project schedule, safety of workers, accessibility of project site, 

When an aerial crossing of the ravine is the only feasible solution, there are multiple different types of aerial crossings that can be utilized. For smaller crossings less than 15 m in width, a cantilever crossing can be used. This methods consists of using two iron pipes, with the joint centered at the crossing, cantilevered by weight of the backfill on the ends of the pipes. This method is easily constructable by unskilled labor and does not require much engineering. For larger crossings greater than 15 m in width, a cable suspension crossing can be used. This method consists of installing posts encased in concrete on either side of the trench. A cable is then suspended across the span, with the pipe hanging from the cable. This method requires a detailed engineering evaluation, and is more difficult to construct. In most cases, unskilled labor for the construction of these crossings will be utilized, under the supervision of the engineer.

Basic static structural engineering analysis based on span lengths and terrain conditions and a careful selection between the options can yield more efficient design and construction as well as result in a sustainable project delivery. This paper discusses these options and their applications to the various challenges encountered on rural water supply systems in undeveloped countries, highlighted by lessons learned from experience on a water supply project in Honduras.
Just about anywhere along the supply chain, steps toward greater cargo velocity and visibility are steps in the right direction. Tracking technologies – ranging from the basic to the more advanced – are giving logistics managers increasing control over cargo safety, security and timeliness. They can also enhance a business’ competitive edge with more flexible, customized and speedy service. Organization generates greater productivity and positions marine terminal operators for future growth.

**Tracking Brings Efficiency**
Efficiencies hail from technology. Terminal operators can save time when they know the exact horizontal or stack location of a unit of cargo. That facilitates movements on and off vessel, truck or rail carrier. Knowing the availability and location of space for storing incoming goods is also critical. And facilitating management functions through automatic alerts, billing, surcharging, data entry and inventory checking can help control administrative costs. These systems also expedite inspections and enhance security through theft detection, prevention, and alerts through the direct monitoring of the cargo.

**Container Tracking**
The TraPac Container Terminal at Dames Point, MOL’s $300-million dedicated terminal in Jacksonville, opened for business in 2009. The design incorporates an in-house proprietary terminal operating system first implemented at the company’s Los Angeles facilities. Built on a grid and hard-wired with fiber optics, the TraPac terminal tracks cargo in real time, ensuring the greatest accuracy. Dennis Kelly, TraPac’s Regional Vice President and General Manager, said all cargo, whether wheeled or grounded, inbound or outbound, is tracked in real time through GPS. TraPac’s administrative office in Austin, Texas handles sequencing of the container moves and relays the information to the terminal electronically, allowing terminal operations to focus on speed and efficiency. For moves numbering into the thousands on any given day, sequencing is critical. TraPac’s automated elements also help ensure customer service is personalized, according to Kelly. For example, when a trucker arrives at the gate and clears security, a computerized control system relays the container and chassis number through optical character recognition (OCR) readers and communicates directly with a remote ILA clerk. “If everything is in order, it takes 10 to 15 seconds for the clerk to input the information,” said Kelly. “That initiates a booking and goes to TraPac’s interchange, and the booking ticket is issued.” Drivers quickly receive instructions on where to go and what to do in the yard. Kelly said, “The system does all our thinking for us – we tell it what we need for the day. It does the rest. Our average truck turn time is 15 to 16 minutes per move, which is at least 50 to 100 percent faster than competitors. This benefits the trucker and customers. Because trucking company profit is based on turn time, more efficient terminal operations ultimately benefit the cargo owners. There is potential to automate further in the future. That will make our operations more efficient, safer and cleaner,” said Kelly.

**Heavy Lift and Project Cargo Tracking**
Portus’ project cargo terminal in Jacksonville is supported, arguably, the best heavy-lift berth in the nation. Director of Customer Service and Business Development John Mullins said that his operating system, Jade Master Terminal, is indispensable in managing the complexity of project cargo shipments, which may include heavy-lift, containers, breakbulk and vehicles. Mullins said, “Our high-value cargo owners are particularly interested in the location of cargo – there is a lot of money involved. They sleep better knowing first hand that their cargo made it on the ship.” With Jade, Portus can offer real-time visibility—whether the item is on the ship, the pier or out of the gate. Visibility isn’t just about peace of mind, Mullins said, “Certain people get paid at certain points in the movement. And there are cutoffs imposed by us, Customs, the line, the letter of credit – our business is all about time.” He said, “When the crane stops nobody is making money. It has to keep moving to obtain optimal production. With Jade, we know exactly where the product is and where it is going and in what order. That keeps the cranes moving.” Mullins described other innovations and technologies that “separate us from the pack.” He focused on the value of training and the tenure of Portus employees. The terminal’s master rigging program is unique, and there is
virtually no cargo that his riggers haven’t found a way to load safely, using the latest equipment. “There is only one way to load and unload, and that is the right way,” according to Mullins.

The equipment operator program at Portus also produces specialists. “When operating machines valued at hundreds of thousands of dollars, or more, there is no learning as you go,” said Mullins. Automated elements at gates, scales, and other points, coupled with optimal yard configuration, keeps Portus organized. “It is all about production. Ship turnaround is critical and we can’t waste time trying to figure out when and how to do something. Automation is organization and organization lets us achieve maximum productivity.”

Crane Tech
Updated technology is also helping to make JAXPORT’s cranes more efficient, thanks to upgrades completed recently by Talleyrand and Blount Island Marine Terminal equipment teams and JAXPORT’s Finance and Information Technology departments. New software records and tracks crane activity using computers onboard the cranes. The data is then sent to a central location, where it is used to process information about crane operations, including the number of containers moved, as well as the size and weight of each container. All of this improves JAXPORT’s ability to track cargo and makes it easier to keep the cranes on regular maintenance schedules. “The crane software upgrade proved to be a very successful integrated team project,” according to JAXPORT’s Chief Operating Officer Chris Kauffmann. “It has had us all coming together to improve the port’s ability to move cargo as efficiently as possible for our tenants and customers.”

Another improvement is currently in the works. Crane technicians are being equipped with laptops and other technology to make performing certain repairs and maintenance tasks faster and easier when time is of the essence during operations.

Ro/Ro Tracking
Along with the technological advances employed by JAXPORT’s major auto processors serving the world’s vehicle manufacturers, the Jacksonville-based auto exporting web app, ExportOut, combines booking and tracking Ro/Ro cargo for smaller businesses into one streamlined process. Export Out works similarly to popular booking web apps such as Travelocity or Expedia. Customers can select ports they are interested in shipping to and from, enter the size of the vehicle they want to ship and see the prices and availability of ship dates and carriers. Hadi Abdalhadi created ExportOut, a fully-licensed freight forwarder, to make it easier and more efficient for smaller shippers to export automobiles. “Our customers can compare rates and services, see available shipping times, book right away and have ExportOut coordinate the rest of the process - which includes documentation, invoicing and status updates in case of changes or delays.” The web app is available 24/7 for booking and tracking. ExportOut’s Member Dashboard shows the cargo status every step of the way, and offers visual updates when a vehicle is delivered, cleared, loaded and arrived. Cost savings is another benefit. “We work off commission from the shippers, and on a contract basis - like any other freight forwarder - and we do not charge documentation fees,” said Abdalhadi. “The cost-effectiveness is passed to our customers because they are able to compare and select the best price through our system and have everything taken care of for them. This is a very competitive market, and we simply want to make business as easy as possible for our customers and for small businesses in the auto export industry.”
Johnson & Johnson is asking University of North Florida students to help with researching and developing new 3-D printing technologies. A ribbon-cutting ceremony at UNF, marked the grand opening of a new 3-D printing lab fitted with seven printers.

Peyton Hopson is an Engineering fellow with Johnson & Johnson. On Friday he held up a pink and yellow plastic wrench, printed at the University of North Florida.

“So this is basically a simple wrench with an actuating part in it that sort of opens and closes,” Hopson said. “[It] was generated with no assembly whatsoever.”

The tool — printed as one piece, with movable parts — is one of the technologies Johnson & Johnson wants UNF students to use to develop new processes with new materials for the company.

Mark Tumeo, Dean of UNF’s College of Computing, Engineering and Construction, says while most people think of 3-D printers spewing out plastic toys and tools, UNF is working on medical devices and implants.

“What we’re researching here is the use of novel materials,” Tumeo said.

He said an example would be a knee replacement.

Engineering College Dean Mark says students are working toward creating pieces like implantable knee caps. He says UNF is leading Florida with this research.

“They’ll take an MRI of your knee, feed that data into the computer and while you’re getting ready for surgery it will print an actual replacement knee that is perfectly specified for you,” Tumeo said. So that’s the goal, the long-term goal.”

He says UNF is leading Florida with this research.

“It is a major selling point,” Tumeo said. “This is one cutting-edge areas of advanced manufacturing, and we’re a leader in the state. And with Johnson & Johnson we can be a leader in the nation and the world.”

The hope is for students will develop sought after skill sets and stay in Jacksonville.
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Can a facility transform your potential?
WE MAKE IT CERTAIN.
**2016 E-WEEK CALENDAR OF EVENTS**

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<th>Event Description</th>
<th>Date</th>
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<td><strong>Saturday, January 23rd</strong></td>
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<td><strong>Boy Scout Engineering Merit Badge Clinic</strong></td>
<td><strong>UNF Science &amp; Engineering Building</strong></td>
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<td><strong>Thursday, February 18th</strong></td>
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<td><strong>Whiskey Jax</strong></td>
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For more information on these events, visit [http://nefl-eweek.org](http://nefl-eweek.org)
2016 E-Week Events CorkBoard

Pictures of last year’s events

Want to be on the E-Week’s CorkBoard, don’t miss out on our events coming up for year 2017. Look forward to seeing you there!
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<td><strong>Awards Banquet &amp; Casino</strong></td>
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