From asteroid mining to space tourism, businesses are accelerating plans for liftoff. But how close are they?

PAGE 12
As I close out my first year as president of Embry-Riddle, I feel fortunate to work for the world’s oldest, largest and most comprehensive aviation and aerospace education institution. Embry-Riddle is a special place, driven by people of great talent and passion.

We’ve now begun the important work of leveraging that collective talent and passion to take Embry-Riddle to even greater heights. In particular, we’ve reached out to the entire university community for input on strategic planning. Good progress has been made toward identifying key goals, success metrics and next steps for increasing enrollment; enhancing the student experience; expanding our global influence; growing our research capabilities; and securing resources to fuel our success.

There is still much to do in achieving our goals, but we are building upon a solid foundation. We remain financially strong; enrollment is up; and with more than 80 undergraduate and graduate degrees and a growing number of professional programs, our students around the globe have more choices than ever before. And whatever course of study they choose, they will work with exceptional faculty in technology-rich environments that anticipate the ever-changing research and workforce needs of the industry.

Embry-Riddle’s influence is growing all over the globe, especially in those areas where the aviation industry is strongest. In December, I had the privilege of attending the largest graduation ceremony to date at our Asia Campus in Singapore. Our presence in Central and South America is also growing. In 2017, our Brazil-based team served more than 650 students through professional education, applied research, and local academic and professional opportunities. In November, I addressed graduates of a new Aviation Management Program being offered to managers with Brazil’s major airlines.

As Embry-Riddle’s progress continues, students will always remain our core mission. At my first State of the University address, I urged all members of the university community to strive to be a pivotal mentor in a student’s life — someone our students will remember fondly 10 years from now. Working continuously to have a positive, life-changing impact on our students is at the heart of everything we do.

To all who have welcomed my wife, Dr. Audrey Butler, and me to Embry-Riddle: thank you. I look forward to working with you to make a difference in the lives of our Embry-Riddle family.

Regards,
P. Barry Butler, Ph.D.
President, Embry-Riddle Aeronautical University
**ALUMNIETER**: HIGH POINTS AT EMBRY-RIDDLE

The Prescott Campus celebrates its 40th anniversary (1978–2018). All three Embry-Riddle campuses were recognized by the Military Times as 2018 Best Colleges for Military Students and Veterans. Two Daytona Beach Campus research payloads traveled to suborbital space on Blue Origin’s New Shepard rocket on Dec. 12, 2017. The Prescott Campus Golden Eagles Flight Team won the Region IX National Intercollegiate Origin's New Shepard Rocket Two Daytona Beach Campus Military Students and Veterans. as 2018 Best Colleges for Times

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**ALUMNIETER**: UNLIT TWILIGHT

The Worldwide Campus was named No. 1 for Best Online Bachelor’s Programs for Veterans and No. 2 for Best Online Bachelor’s Programs, overall, in 2018 by U.S. News & World Report. The Prescott Campus celebrated its most successful fall athletics season ever with four Cal Pac championships and record-setting program wins for women’s soccer and volleyball.

**ALUMNIETER**: 30 YEARS AT EMBRY-RIDDLE

Embry-Riddle is believed to be the only university with a Stage II registration.

**30 YEARS AT EMBRY-RIDDLE**

A new project at Embry-Riddle's Daytona Beach Campus is expected to create 387 jobs and spur $1.6 million in private investment. Partially funded by a $1 million grant from the U.S. Department of Commerce through its Economic Development Administration, the project will establish Embry-Riddle's Applied Aviation and Engineering Research Hangar. This facility will be the new home of the Eagle Flight Research Center (EFRRC), a hub for engineering research and development. "Embry-Riddle has a 90-year legacy of innovation, and our research is shaping the future of human mobility," says university President P. Barry Butler. "We are pleased and honored to receive this research award to advance innovation, economic development and job growth in Florida." Established in 1998, the EFRRC continues to guide aviation technology into the future. "Our continuing research will encompass aviation innovation projects such as alternative propulsion systems, electric and hybrid electric aircraft, and electric vertical takeoff and landing, or eVTOL, aircraft, as well as new fuels," says EFRRC Director Richard "Pat" Anderson. This project was made possible by the regional planning efforts led by the East Central Florida Regional Planning Council. The expected completion date is winter 2019. — Ginger Pinholster

**ASSESSING SPACE TRAFFIC MANAGEMENT**

At the Daytona Beach Campus in January to discuss critical and leaders of government and industry from multiple disciplines and different aspects of the air/space traffic management set of issues," says Diane Howard, conference chair and assistant professor of Spaceflight Operations at the Daytona Beach Campus. Conference attendees participated in a variety of roundtable discussions and international panels. The topics addressed included commercial space transportation and impacts on the National Airspace System, security issues, challenges and benefits of increasing small satellite constellations capacity; integrating satellite-based ADS-B communication standards for space traffic; government research needs; future models of space traffic; management, and international initiatives. For more, visit commons.erau.edu/stm/2018/.

**SPACE TRAFFIC MANAGEMENT**

**NEW HOME FOR INNOVATION**

US Department of Commerce invests $1 million to establish new aviation and engineering research center in Florida

**FIRST EMBRY-RIDDLE SATELLITE TO ORBIT EARTH**

On Nov. 18, 2017, engineering students at the Prescott Campus watched as a project five years in the making became a reality. EagleSat-1, a student-designed cube satellite (CubeSat), was launched into space — making it the first Embry-Riddle satellite to orbit Earth. EagleSat-1 was able to hitch a ride aboard the second stage of the Delta II rocket carrying the JPS-1 weather satellite for the National Oceanic and Atmospheric Administration, thanks to NASA's Educational Launch of Nano-satellites program.

**GROWING UP**

Asia Campus celebrates largest graduating class ever

Embry-Riddle’s Asia Campus in Singapore celebrated its largest graduating class to date with 112 diplomas awarded on Dec. 8, 2017. Kaynote speaker Capt. Quay Chiew Eng, senior vice president of the flight operations division of Singapore Airlines International Limited and a member of the Embry-Riddle Asia Campus Industry Advisory Board, addressed the graduates and more than 500 guests at the event. Since its first commencement ceremony in 2012, Embry-Riddle has conferred more than 300 degrees from its Asia Campus, the university's first and only location in Asia. The campus works closely with key partners Singapore Aviation Academy, Singapore University of Social Sciences formerly UniSIM and EERC Institute in Singapore to deliver doctoral, master’s and bachelor’s degree programs.

EagleSat-1 in development

**EAGLESAT-1 BECOMES FIRST EMBRY-RIDDLE SATELLITE TO ORBIT EARTH**

The mission of EagleSat-1 is to study the satellite's orbital decay and demonstrate the use of super capacitors for power rather than traditional rechargeable batteries. The Embry-Riddle EagleSat team estimates its CubeSat will be in orbit seven to nine years. As of January, the EagleSat team had been unable to contact EagleSat-1 from its ground station on campus. It is, however, being tracked by NORAD, which monitors human-made objects in space. Efforts to contact it will continue this spring. The team has already started to design a second CubeSat. EagleSat-2.

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Joan Lewis

Colleagues and students of former Embry-Riddle Worldwide College of Business professor Robert Wayne Harsha have penned their memories of the faculty member, who passed away last year.

Harsha was a full-time associate professor in the Embry-Riddle Worldwide College of Business. He served at various times in a distinguished career as a regional faculty adviser, chair for the Master of Science in Technical Management and Master of Science in Management programs, and chair of the leadership department. Above all, he was a friend, mentor and encourager to numerous Embry-Riddle students, faculty members and administrators, including myself.

Dr. Eugene L. Round

Robert Wayne Harsha

In Memoriam

Robert Wayne Harsha

In Memoriam [Page 37, fall 2017] lists Robert Wayne Harsha as “Former WW Adjunct Faculty.” While he held that very important position at the Worldwide Campus, he was much more than that—a career that spanned 27 years with Embry-Riddle. Wayne Harsha was a full-time associate professor in the Embry-Riddle Worldwide College of Business. He served at various times in a distinguished career as a regional faculty adviser, chair for the Master of Science in Technical Management and Master of Science in Management programs, and chair of the leadership department. Above all, he was a friend, mentor and encourager to numerous Embry-Riddle students, faculty members and administrators, including myself.

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Emeritus Professor Emeritus College of Arts and Sciences 
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MEMORIALS

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Emeritus Professor Emeritus College of Arts and Sciences 
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The Aviator Ant

Celebrating the 40th anniversary of the Klyde Morris comic strip at Embry-Riddle

BY MELANIE STAWECKI AZAM

I n junior high school, Wes Oleszewski ('87, DB) loved aviation, space, drawing cartoons and ants.

“1 launched a lot of model rockets, and I put ants in them as passengers,” he recalls. “I had a comic strip of ants dying horrible deaths. If you write comics about people getting killed, nobody likes it. But when ants die, nobody cares.”

Fast-forward to 1978. Oleszewski is a freshman at Embry-Riddle’s Daytona Beach Campus. The Avion student newspaper wants to run a comic strip starring an Embry-Riddle student. The “student” just happens to be an ant. There’s one problem: Oleszewski can’t think of a name for the strip.

“I was on the bus with the cartoon strip in my folder, and the bus pulled out onto Clyde Morris Boulevard,” he recalls. “That’s how the character got its name about five minutes before I turned it in.”

On Wednesday, Feb. 15, 1978, the iconic comic strip Klyde Morris, which recently celebrated its 40th anniversary, was published in The Avion for the first time. Over the years, Klyde Morris has chronicled the experiences of an Embry-Riddle student, lampooned the university administration and poked fun at the aviation industry.

“Klyde is an ant in a world of giant people and that is what a lot of people feel like,” Oleszewski says. “But Klyde perseveres. He is sort of an ‘everyman’ ant.”

Persistence Pays Off

Oleszewski needed that perseverance himself to earn his college degree and pilot’s certificate with meager financial resources. It took him nearly 10 years to graduate from Embry-Riddle, with periods of hiatus in between.

“Everybody said I couldn’t do it. I come from a blue collar, formerly industrial part of the country. Neither of my parents finished high school,” he says. “I knew when I started Embry-Riddle, I couldn’t afford it. But when I got to campus, I decided I am not going to flunk out or quit. When I was out of school, I worked just so I could get back. My goal was to finish what I started.”

Klyde Morris continued to run in The Avion, even when Oleszewski wasn’t a full-time student, meaning thousands of students read the strip over the years. More than 1,200 Klyde Morris strips were published continuously in The Avion from February 1978 until April 1988.

“The staying power of the cartoon comes from my phenomenon of working my way through college,” Oleszewski says. “Klyde stayed in The Avion; and as a result, a lot of people who went into the aviation industry were Klyde fans.”

The comics lampooned university presidents Jack Hunt and Kenneth Tallman, but Oleszewski says he was actually friends with both of them. And sometimes, they even collaborated on topics for the strip. During his time at Embry-Riddle, he met lifelong friends, his future wife, Teresa (’88, DB), and mentors like Embry-Riddle’s founder John Paul Riddle, who attended Oleszewski’s wedding.

“John Paul Riddle was always on campus, sitting at a table at the university center and telling stories,” Oleszewski recalls. “And he liked my cartoon strip.”

Klyde Lives On

After finishing his degree, Oleszewski worked as a commercial and corporate pilot, but continued to draw the Klyde Morris strip, focusing more on the aviation and space industry. The strip ran a few years in the University’s alumni newsletter, then was launched online in 1999. It was syndicated in 2003 with Aero-News Network. Students can still find the strip in The Avion, as the artist has gifted a free license to the student publication.

Oleszewski is also a book author. “I was flying a lot and in hotels a lot, and there is nothing to do — so I wrote,” he says.

Eventually, he decided to stay home to raise his two daughters and focus on writing full time. “After three furloughs in 11 years, I was done,” Oleszewski says. “I’ve had people tell me they need me writing Klyde Morris more than they need me in the cockpit.”

Forty years after the launch of his Klyde Morris strip, Oleszewski has been able to combine all of his passions again. He is currently working on his 24th book, plus he works as a spaceflight analyst and a cartoonist for Aero-News Network, which continues to publish Klyde Morris.

“The strip very often kind of writes itself,” Oleszewski says. “I have a very active imagination and memories of my own experiences.”

Oleszewski says he was never bitter about his long tenure as an Embry-Riddle student because the experiences he had made him who he is today. “I see finishing Embry-Riddle as my single greatest accomplishment,” he says.
Moriba Jah — he developed an animated personality and a dogged determination that resulted in many career successes. Today, Jah is a leading voice in the discussion over human-made orbital debris.

Driven by Altruism

Jah has more than 75 published scientific papers to his name and has given lectures and TED Talks on the subject of space situational awareness and astrodynamics. His credentials amplify his voice, but his motivation is bigger than himself.

“It’s been a long road, but I feel blessed, guided by my path and that I am able to overcome that barrier that faculty often put up with students in terms of maintaining a professional distance,” Jah says.

Shaking to Earth Orbit

The research Jah did with Madler through the Arizona Space Grant Consortium sparked his interest in graduate school, which led him to study under Born at the University of Colorado at Boulder, culminating in a job at NASA’s Jet Propulsion Laboratory (JPL). He worked at JPL for seven years as a spacecraft navigator, analyzing tracking data on specific satellites for Mars missions and predicting their trajectories.

Jah half-jokingly says that the character of Rich Purnell, played by Donald Glover in the 2015 science fiction movie The Martian, is modeled after him. “The only person in The Martian that is an astrodynamist is a black dude with short dreadlocks. There was only one of those at JPL, and that was me.”

His 10-year stint at the Air Force Research Laboratory (AFRL), following JPL, brought his personal mission closer to Earth. He worked to track and understand the population of roughly 23,000 human-made objects (larger than 10 cm) in Earth’s orbit, of which only approximately 1,500 are working satellites. This human-made orbital population became his primary concern. Jah decided that the nontransparent nature of the Department of Defense’s tracking operations could be a problem for private entities wanting to enter the orbit. His research, now as an associate professor at The University of Texas at Austin, centers on establishing a more reliable and accessible “data lake” on space objects and events, and setting up a framework conducive to discovering key insights regarding how objects in space behave. His hope is that this data will inform space policy and regulations to maximize orbital safety and long-term sustainability of space activities.

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WEB EXCLUSIVE

At The University of Texas at Austin, Moriba Jah leads a research program called Advanced Sciences and Technology Research in Astronautics (ASTRA), which he developed while working at AFRL. Learn more at lift.erau.edu/space-junkie.

Space Junk(ie)

From a bullied child to an accomplished astrodynamist, Moriba Jah is a lead researcher on orbital debris operations in space.

BY ALAN MARCOS PINTO CESAR

Flight Back to the States

As a U.S. citizen attending a military high school in Venezuela, Jah couldn’t join the Venezuelan military like his classmates. His second choice, the U.S. Marines, was also a no-go, thanks to another barrier.

“I was 17 years old. My mom wouldn’t sign any of the documents unless I was going into the Air Force or the Navy,” Jah says. “I just wasn’t a boat dude, so I went into the Air Force.”

Jah was working as a security policeman at Malmstrom Air Force Base in Montana when he took a course in aviation law through the Embry-Riddle Worldwide Campus. That introduction led him to study at the Prescott Campus when he left the service.

A Beacon in the High Desert

In Prescott, Arizona, Jah found a new direction when he took a course with Ron Madler, who had been teaching there for only about a year. “He was into orbital mechanics, and quickly my interests shifted from aircraft to satellites,” Jah says.

Madler provided a positive environment and mentorship on his path forward. “I had a lot of other people around me at the time saying this isn’t for me. I’m a nontraditional student; I didn’t take calculus; I’m not really what an engineer looks like,” Jah says. “Out of all the negativity, Ron was a lighthouse in the darkness for me. That made all the difference. I found another lighthouse at the University of Colorado at Boulder in the late George Born and built upon that. The opportunities and mentoring that I got from Ron and George are the things I built the rest of my career upon.”

DIY Internships

Madler, now dean at the College of Engineering at the Prescott Campus, remembers Jah as a student with a clear vision of his future in space. “Moriba took great initiative. He found somebody at Los Alamos National Labs and did all the work to set up a summer internship there with their space division. He did the same thing with Jim Wertz at Microsoram.”

Madler cites Jah’s personality for his success in these ventures. “It was as if he was able to overcome that barrier that faculty often put up with our students in terms of maintaining a professional distance,” Madler says.

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Four Embry-Riddle alumni support space science research aboard the Stratospheric Observatory for Infrared Astronomy project

By Sara Withrow

1:39 p.m. Eastern time on Thursday, Oct. 5, 2017, Navigator Jeff Wilson (‘97, WW) sits in tense anticipation as he waits for confirmation that the 747 he’s flying has reached its rendezvous point.

Years ago, Wilson was a navigator on B-52 bombers for the Air Force. His military training and experience prepared him well for tonight’s fast-moving eclipse-like event where the moon passes between the Earth and a faraway star, will cast a fast-moving shadow in a narrow path over the Atlantic Ocean.

It’s Wilson’s job to make sure that the Stratospheric Observatory for Infrared Astronomy (SOFIA), a modified 747 Special Performance (SP) aircraft equipped with a 2.5-meter, 17-ton infrared telescope, is there to intercept the shadow at the right time.

SOFIA, a space science partnership between NASA and the German Aerospace Center (DLR), has installed ER-2 high-altitude science jet, the Gulfstream G-II mission support aircraft and the C-20A (G-III) science platform aircraft that carries the NASA Jet Propulsion Laboratory’s synthetic aperture radar.

“SOFIA isn’t just a 747SP aircraft; it’s a laboratory’s synthetic aperture radar. They’re Frankenstein aircraft,” Neeley says. “None of the controls are standard. You have to get in there, take a deep breath and take it slow. It’s not like getting in the Cessna you get in every day, where you can do it blindfolded.”

Woodworth and Muri’s jobs kick in before and after each flight. They help ensure that the aircraft and its avionics systems are maintained and performing at optimal levels.

“We don’t want to lose out on any science because of a maintenance issue,” Woodworth says. “It’s a make-or-break mission with a two-minute window of opportunity. Triton’s occultation, an eclipse-like event where the moon passes between the Earth and a faraway star, will cast a fast-moving shadow in a narrow path over the Atlantic Ocean, when the light of the eclipsed star is focused and intensified through Triton’s atmosphere.

Wilson and the entire SOFIA crew celebrate with handshakes and pats on the back. His third occultation to navigate for NASA, Wilson says midflight changes are common. For Triton’s occultation, the original plan moved about 400 nautical miles, he says.

“It’s a lot like a bomber,” he says. “You basically have a target time, and you have to make your target time precise. Because we fly at a high altitude, you have like a 10-knot window in speed to work with. You have to think ahead, and you have to use geometry, because you can’t use air speed.”

He adds, “It’s stressful, it’s challenging, but it’s rewarding at the same time.”

SOFIA Eagle Team

While they weren’t on the aircraft for this mission, three other Embry-Riddle alumni are also instrumental members of the SOFIA team: avionics specialist Andrea Davis Muri (‘12, WW), aircraft mechanic Mike Woodworth (‘10, WW) and research pilot Dean Neely (‘03, WW).

Neely piloted SOFIA on other science missions earlier in the week and flew the test flight the night before Triton’s occultation. In addition to SOFIA, Neely flies several other highly modified scientific research aircraft for NASA, including the single-seat Lockheed ER-2 high-altitude science jet, the Gulfstream G-II mission support aircraft and the C-20A (G-III) science platform aircraft that carries the NASA Jet Propulsion Laboratory’s synthetic aperture radar.

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SOFIA, a space science partnership between NASA and the German Aerospace Center (DLR), has a distinct advantage over ground-based telescopes. It flies at an altitude of 39,000 to 45,000 feet, which is above 99 percent of the water vapor in Earth’s atmosphere. This gives the telescope a clearer view of astronomical events.

Moments later, Wilson gets the confirmation he’s waiting for. The science director announces the mission’s success. The occultation was captured and recorded, including the all-important central flash,
Embry-Riddle faculty and alumni space industry experts predict new, thriving, wholly commercial space markets

By ALAN MARCOS PINTO CESAR, SARA WITHROW and MELANIE STAWICKI AZAM
Illustrations by TIM BOELAARS
he race to commercialize space is accelerating. For decades, governments — intent upon establishing a national presence in this new frontier — have mostly footed the bill. But now, commercial enterprises are getting into the act in a big way.

“The amount of revenue generated by commercial space activities now outpaces that being spent by the world’s governments. This is a dramatic shift from early space activities, in which revenue was closely tied to government expenditures,” says Sonya McMullen (’00, W’04), a Worldwide Campus assistant professor who researches the commercial space industry.

This new space revenue reality is setting the stage for a wave of pure space commercialization. “I think we’re right at that barnstorming era — ’30s or so, and right at about the 1930s, in terms of the government arm’s contracts for the aviation industry,” McMullen says. “The government told the airlines, ‘We don’t want to subsidize you forever, so go develop bigger airplanes where you can carry people.’ That’s what’s happening with the space industry, she says. “I think we’re at the tipping point.”

A Wide Open Space Market

Lower entry costs are fueling the new space economy, according to Kelly Whealen-George (’15, DB), associate professor and chair of the economics discipline for the Worldwide Campus.

“There’s a lot of venture capitalists out there,” she says. “It’s now [in space] jam; everyone is getting into the business. Why? Because it’s more affordable — and when it’s more affordable, it opens up the market.”

And an open market is usually a growing market. In her 2013 study, Whealen-George predicted that the global space industry would grow 18 to 40 percent by 2030, depending upon certain key economic drivers, such as geopolitical and socioeconomic developments. So far, her projections appear to be on track. With a total estimated $339 billion in economic activity (according to the 2017 Satellite Industry Association’s State of the Satellite Industry Report, the space industry has grown 7 percent from 2013 to 2016. McMullen says private launch businesses, like SpaceX, have disrupted the space economy by breaking the long-standing $10,000-per-pound cost barrier. “That’s dirt cheap,” she says, “especially when you consider that it cost more than $1 billion to launch the last space shuttle [in 2011].”

Moneymaker

At 77 percent of the total global space economy, satellites are the driving force propelling the industry.

“The big commercial items are always going to be telecom. They have a satellite asset, they buy a ride on a rocket, and they have users on the ground. That’s how they generate their money,” says Ryan Kobrick, assistant professor of commercial space operations at the Daytona Beach Campus.

According to the 2017 Satellite Industry Association’s report, satellite numbers have increased by 47 percent in the past five years, thanks in large part to small or very small satellites in low Earth orbit (LEO).

“The small satellite industry is hugely growing,” says Robyn Ringuette (’97, DB), vice president of Liquid Propulsion at Virgin Orbit, a recent spinoff of Virgin Galactic. Satellites have gotten smaller and cheaper to build and launch, Ringuette says, reducing business risk and enabling more companies to enter the market.

Virgin Orbit plans to further cut costs of satellite launches with its LauncherOne program, which is set to deploy for the first time in 2018. LauncherOne will offer low-cost, quick-turnaround launch services to the small-satellite industry, with fewer restrictions on launch timing, Ringuette says.

Instead of launching from a fixed site in Florida or California, LauncherOne will detach from the wing of a Boeing 747-400, called “Cosmic Girl,” while it’s flying 35,000 feet over the ocean. Once released, the LauncherOne rocket will carry the satellites into orbit.

Another innovation is taking a strength-in-numbers approach. This year, several companies have plans to begin deploying LEO large groups or “constellations” of satellites that number in the thousands, McMullen says. These could provide global phone, internet and/or imaging services with no service interruption as early as 2022.

“More people in the world have cellphones than there are toilets,” McMullen says. The profit potential is huge, especially because it’s cheaper than ever before to build and launch satellites, she says.

Space Clutter

But there may be a problem: space debris.

“I think it’s important that we’re aware of orbital crowding,” Kobrick says. “Companies that are making the jump to making these constellations for things like global internet have a huge responsibility in leading how that is done.”

The U.S. Strategic Command tracks about 1,600 functioning satellites orbiting Earth, but there are millions of human-made objects and debris up there, says Morita Jah (’99, PCI), an astrodynastmist and associate professor at the University of Texas at Austin. Industries and governments alike are concerned about the growing space trash problem. [See sidebar: Trash in the Global Commons.]

Tow Trucks in Space

Scott Weintrub (’16, DB), president and CEO of Weintraus, which is located in Embry-Riddle’s Research Park in Daytona Beach, Florida, says his company plans to stop the space debris epidemic. The solution: Hercules II, an on-orbit robotic services space tug that can dock, repair, refuel and maneuver other spacecraft in LEO. Weintraus expects to launch its first operational vehicle in 2022 and a second vehicle with robotic arms by 2024.

“For nonspace people, I call it a tow truck,” Weintrub says. “Imagine if every time your car breaks down, you have to buy a new one. You can’t take it to a mechanic. It stays on the road where it stopped. That’s the analogy in space right now.”

In addition to Hercules II, Weintraus is designing a fleet of modular satellites with standardized connectors. Weintrub says on-orbit services like his could conceivably extend a satellite’s average life span to 100 years.

“We can stop the space debris problem if we change the way satellites are manufactured — meaning they’re no longer replaced, they’re just fixed and reused. And when they do die, we would have the option to go to them and send them to burn up in Earth’s outer atmosphere or to the sun.”

Edward Ellepood (’15, DB), publisher of the Florida SPACEPORT and a business development analyst at Saaalex Solutions, says there are arguments for using maritime law for space operations. “In shipping, it’s common practice to flag your vessel in a country that has laws favorable to your shipping, it is common practice to flag your vessel in a country that has laws favorable to your shipping, it is common practice to flag your vessel in a country that has laws favorable to your shipping. That’s what’s happening with the space industry, she says. “I think we’re at the tipping point.”

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Countries like Luxembourg are developing legal frameworks that encourage space enterprise on this model. As of November 2017, the space industry represented 2 percent of Luxembourg’s annual gross domestic product. The country is attracting foreign business, as well. The asteroid mining company, Planetary Resources, established a European headquarters in Luxembourg after the country invested nearly $28 million in its research and development. This tiny European country may become a leading “flag carrier” in the new space economy.
“Just as barnstorming was for aviation, [space tourism] is about building excitement for the industry and raising money to continue to develop new aircraft.” — SONIA McMULLEN

Space Tourism
Space tourism is another market on the horizon, and it’s garnering attention from a wealthy, thrill-seeker subset of the population. A 2012 study by the Tuari Group titled, Suborbital Reusable Vehicles: A Ten-Year Forecast of Market Demand, estimates “40 per- cent of the interested high-net-worth population, or 3,600 individuals,” would fly within the first 10 years of space tourism becoming operational. The study included surveys of 200 people with a net worth of $5 million or more.

But high ticket costs could be an issue in making the business case for space tourism. Kobrick says a 10- to 11-minute space experience presently costs around $150,000 to $200,000. “They need to get it down to where a trip to space is like an expensive family vacation, like taking a family to Australia. That’s what’s going to make a difference — if the vehicles are ready, of course,” Osterlund says.

To date, no commercial space tourism missions have flown, but Virgin Galactic predicts a 2018 launch of its human transport vehicle, SpaceShipTwo. Blue Origin is also planning a manned launch of its New Shepard capsule in 2018. But Edward Ellegood (’15, DB), publisher of the Florida SPACEREPORT and a business development analyst at Saaslo Solutions, cautions: “It’s been a decade since the first flights were proposed to have taken place. Virgin Galactic and XCOR, which is now out of business, and a handful of others, were all expected to have flown for years now. For various rea- sons it hasn’t happened because of safety.”

Kobrick agrees. “The joke in the industry is that suborbital tourism is always two years away.”

While its future as a viable space market remains uncertain, McMullen says space tourism is much more than a parody. “Just as barnstorming was for aviation, it’s about building excitement for the industry and raising money to continue to develop new aircraft,” she says.

Power of Space
Another industry garnering lots of investor attention is mining in space. Joe Landon (’01, DB), chief financial officer at Planetary Resources, says his company is currently “mining in space, with plans to develop new technologies, including space robotics and control systems, to harvest asteroids (Stukents) and advanced rocket propulsion systems.”

Embry-Riddle is an active partner with Polar Suborbital Science in the Upper Mesosphere (POSSUM), a nonprofit organization that conducts upper-atmospheric and space technology research. The university hosts training sessions for POSSUM scientist-astronaut candidates and helps test emerging technologies for its bioastronautics program.

Specialized facilities, such as the Prescott and Daytona Beach campus observatories, the Cosmic Ray Lab, the Laser Interferometer Gravitational Wave Observatory (LIGO) Lab and the Laboratory for Exosphere and Near-Space Environment Studies are creating new knowledge that informs the university’s program offerings, research and curricula. The university also collaborates with the Space Generation Advisory Council to promote space activities and strengthen the space workforce through education and career development.

For more, visit erau.edu/degrees/space.

Emory-Riddle is preparing the next generation of space industry leaders for takeoff and partnering with businesses in research and development that will grow the space economy. The university offers a variety of space-related degree programs that include astronomy and astrophysics, astronautics (aerospace engineering), space physics and spaceflight operations. Additionally, faculty and students are researching and developing new technologies, including space robotics and control systems, small satellites (CubeSats) and advanced rocket propulsion systems.

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Planetary Resources is targeting late 2020 for the launch of its first asteroid exploratory mission. The company estimates that there are more than 16,000 near-Earth asteroids that share a market that will be worth 2 trillion tons of water available in the form of ice.

Beyond creating fuel, long-term plans include mining asteroids for structural and precious metals, which would be used for construction in space and in-space manufacturing of equipment, Landon says.

“Mining resources to ship to Earth wouldn’t be cost effective,” he says. Rather, he explains, as the space economy develops and millions of people begin to work and live in space, there will be a need to have fuel and resources available in space, so it will be too costly to ship everything from Earth.

Point-to-Point Orbital Transportation
A space market that’s a little closer to home involves suborbital and orbital point-to-point travel. Oscar Garcia (’04, DB), partner, chairman and CEO of InterFlight Global, chairs the Standards Working Group for the Federal Aviation Administration’s (FAA) Commercial Space Transportation Advisory Committee (COMSTAC), which is working to develop standards for this industry. Given the existing demand for long-distance air travel, he sees disruptive potential for the point-to-point transportation market.

“When you’re talking about transporting people on Earth very far, very quick and using flight trajectories that reach space to do so, the size of that economy alone, coupled with the value of the market, is on par with the whole space economy today, combined. That’s a game-changer,” Garcia says.

Several companies, including SpaceX with its Big Falcon Rocket, are working to develop spacecraft that could transport people from a departure point on Earth to anywhere in the world in less than 45 minutes. Garcia expects supersonic speeds above Mach 1 and hypersonic (Mach 3 and above) aircraft to become operational first, paving the way for suborbital and orbital point-to-point transportation. “By 2025, we should have a couple of commercial aircraft types flying supersonically all over the world,” Garcia says.

Once supersonic aircraft become commonplace and are successfully integrated into the airspace and airport systems, orbital and suborbital transportation models will fully evolve, he predicts. Garcia, who turns 50 this year, says he expects to see suborbital and orbital point-to-point, high-speed transportation operating in his lifetime.

In addition to his role with COMSTAC, Garcia is an executive committee member of ASTM Committee F47, which is developing standards for commercial
spaceflight. “We are cautiously optimistic that the way to future regulations will be guided by industry consensus standards as a means for regulatory compliance, like aviation is doing more and more with the FAA,” he says.

Legal Hurdles

Garcia says the regulatory framework for point-to-point suborbital and orbital transportation will likely be an extrapolation of existing international air commerce laws. “I expect the speed of technology there and the speed of regulation and global consensus to be pretty much aligned.” Unfortunately, that’s not the case for some other emerging space businesses, he says. Antiquated U.N. treaties that date back to the 1960s need to be updated, he says. “The treaties were signed so long ago in the ColdWar context that they never predicted a commercial space economy.” The treaties are rather general, agrees Diane Howard, assistant professor of commercial space operations at the Daytona Beach Campus and organizer of Embry-Riddle’s annual Space Traffic Management Conference. This is why there is a need for countries to put national space laws into place, she says. In mature space markets, like satellite telecommunications, there is a solid regulatory framework. For emerging markets, like space tourism, the United States has taken a relatively hands-off approach to commercializing space, which has led to ambiguous conclusions to business.

Local rivalry between countries, no matter how big or small, are the biggest stumbling blocks to a smooth launch of mankind’s economy into space,” Garcia says. “Right now, the biggest stumbling block is trust among the United States and China, and then Russia and everybody else.”

Human Returns on Investment

In light of these issues, Howard says there is a need for space diplomacy among all stakeholders or “space actors,” so that the U.N. mandate that space activities serve the interest and benefit of all humankind is upheld. McNally agrees. Putting economics aside, the human benefits of a thriving global space economy are nearly limitless, he says.

“Today, you have people in the middle of nowhere, in Africa, building dams because they can access YouTube to see how to build a dam, or a water filtration system, or an irrigation system — because now they have access to information. Imagine what that information will do for places that are really oppressed. There’s a lot of hope, I think, from that. You’re counting on the space industry to power the world in less than 30 years. None of the space industry has any legal right to do that without drawing its own conclusions, and we can all compare conclusions and see which ones agree and which ones don’t,” he says.

“My motto for my research is: If you want to know if you have to measure it. If you want to understand it, you have to predict it. If you can’t predict it, you don’t really know what’s going on.”
I’ve always been interested in aviation and astronomy as a kid. I also liked photography. I got my first camera at 8 years old, and I was doing darkroom work by the time I was 13.

I became really interested in seeing a space shuttle launch in person. In high school, my dad took me to see one. The launch was aborted just 7 seconds before liftoff, and we did not stay to see it go off a few days later. Still, the experience changed my life. We tried not once, but twice more, before finally seeing one go off on our third trip. After that, I wanted to see more, of course, and Dad let me go on my own. I knew then that I wanted to work for NASA, and I thought that engineering was the way to go.

Almost every great shot I’ve taken involved planning in advance. Sometimes it takes more than one try, but much of the time, you only get one try. And it’s those times, when you nail it on the first try, that you really feel good. Anticipating the exact lighting conditions, even precisely where the sun will be in the sky, is a factor, as is the weather, the rocket’s trajectory and other things.

I have a very technical mind. I can mentally work out things like the trajectories, positions in the sky, angles, etc., beforehand in my head and easily visualize all of this when setting up the cameras. That’s where I feel my engineering background definitely comes into play.

No one is allowed closer than a few miles from the launch pad. All of the photos you see of launches taken from near the launch pad are taken by remotely operated cameras that are set up ahead of time. Generally, I set up anywhere from one to three days before a launch.

The biggest risks of the job are losing camera equipment due to exposure to the rocket or the weather. Extreme heat from the rocket at launch and flying debris are some things I deal with regularly.

The setup can be fun. I’ve walked into swamps with alligators, snakes and spiders many times. I’ve literally set up camera tripods in the water to get the shot I want. None of that bothers me, though. The hard part is dealing with the mosquitoes and the humidity.

Seeing a total solar eclipse was another goal of mine when I was young. It’s something everyone should see at least once in their lifetime. Total eclipses are magical, but they only take place every couple of years in a narrow band across the globe that you have to travel to get to. “Eclipse chasers” are die-hards who travel to try and see them all. I’ve traveled to see six so far.

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— Ben Cooper

See more of Cooper’s work at launchphotography.com.
Passing On a Love of Learning
Worldwide Campus professor creates scholarships for military veterans

BY MELANIE STAWICKI AZAM

ith eight university degrees and 32 years spent living abroad, Donna Roberts (’10, VW) has always had a love of learning.

An associate professor and chair of the social sciences and economics department and undergradu-
ate research at Embry-Riddle’s Worldwide College of Arts and Sciences in Germany, Roberts says she wanted to help students who share her passion for education, especially those in the military.

That is why she and her husband, Sergio Del Bianco, made a generous planned gift to Embry-Riddle, creating an endowed scholarship in their names to help students longterm. The couple, who met in Italy and have been together 22 years, are also funding a term scholarship to immediately help undergraduate or graduate students with financial need.

“Valuing education so much, I wanted to give back to something that is meaningful to me,” Roberts says. “Education opens doors and changes people’s lives in tangible ways.”

The couple also wanted to help students who are serving their country. The endowed term and scholarship gifts will have a preference for Worldwide Campus applicants who are active duty or military veterans.

An American in Europe
An only child growing up in upstate New York, Roberts says she was always curious about the world. She studied Europe in 1987 and began working for the University of Maryland (UMD) in Heidelberg, Germany, in 1991.

“I was the first person in my family to have a passport and go that far away,” she says. “I just fell in love with Europe and wanted to stay.”

She earned a bachelor’s degree in psychology and a master’s degree in counseling from UMD, then worked as a counselor for the Army Community Services Family Advocacy Program. In 1997, she moved to Aviano, Italy, and got a job with the University of Oklahoma (OU). She earned master’s degrees in both adult and higher education and human relations from OU.

“I was just interested in taking classes, then before you know it, there was a diploma in my hand,” she says of her multiple master’s degrees.

Embry-Riddle Journey
Roberts began working for Embry-Riddle’s Worldwide Campus in Italy in 2003, eventually becoming chair of the sociology and psychology for the College of Arts and Sciences. She earned master’s degrees in both aeronautical science and business administration in aviation at Embry-Riddle.

“I wanted to expand my horizons and understand the aviation environment a bit more,” says Roberts, who has now worked nearly 15 years for Embry-Riddle.

After 10 years in Italy, she moved back to Germany to become the regional associate dean for the Worldwide Campus’ European Region, then was promoted to the dean of academics for the International Region. In her present role, Roberts teaches, develops curriculum and writes everything from textbooks to monthly psychology columns for online pop culture magazines.

“Emory-Riddle students are people who are going to change the world, and we want to help them reach those goals,” Roberts says.

“Embry-Riddle students are people who are going to change the world, and we want to help them reach those goals.” — DONNA ROBERTS

Partners for Success
Gulfstream Aerospace supports students with contributions and expertise

BY MELANIE STAWICKI AZAM

Gulfstream Aerospace Corporation is a longtime supporter of Embry-Riddle student projects and pro-
grams. In 2018, the corporation helped fund improvements to the Senior Aircraft Design Lab and provided financial assistance for co-op interns and other student-focused programs.

“We love seeing the students excel and succeed, and we love see-
ing a school that we have such a great relationship with grow,” says Cassie Batayas, Gulfstream college programs manager and a member of the College of Business Industry Advisory Board at the Daytona Beach Campus.

Gulfstream’s support dates back to 1984; however, its 2018 gift is its largest to date.

James Scott, director of develop-
ment at Embry-Riddle, says this recent gift will help the university purchase new equipment, including 3-D printers for the Daytona Beach Campus’ Senior Aircraft Design Lab. The new technol-
ogy will complement the design course curriculum and enhance learning for senior students, who are completing capstone projects, according to Scott.

In addition to buying cutting-edge equipment, the university through philanthropy, Gulfstream employees donate their time and exper-
ience. Each year, Gulfstream engineers work directly with students to help

them define their capstone projects. They regularly confer with students over the phone, and at the end of the term, the engineers visit the campus for face-to-face meetings with students.

“There is another gift they have given without hesitation for more than 15 years and that is valuable time doing design evaluations,” says Jim Ladesic, professor of aerospace engineering and associate dean of the College of Engineering at the Daytona Beach Campus.

“Our students learn from them and they (Gulfstream employees) get to know our students. Gulfstream has been a great friend and colleague in trying to work collectively together.”

The 2018 Gulfstream gift will also help support the Career Services Co-Op Assistance Award Program, which assists students with co-op or intern-
ship expenses; the Society of Women Engineers club, and the Veteran Student Services office (VSS). VSS provides resources to more than 650 GI Bill eligible students.

The Business Eagles program will also receive Gulfstream funds this year. The College of Business program aims to help launch high-performing students into competitive aviation and aerospace careers.

Batayas says roughly 400 Embry-Riddle alumni now work at Gulfstream. “I have a wonderful history with the university,” she says.

Creating Local Connections
Prescott Campus planetarium named for local donors

BY MELANIE STAWICKI AZAM

ontime Prescott, Arizona, resident Jim Lee is eager to see Embry-Riddle’s Prescott Campus and the local community become more con-
ected. That is why he and his wife, Linda Lee, who are both prominent real estate devel-
opers, decided to make a substantial gift to the Prescott Campus’ new STEM (Science, Technology, Education and Mathematics) Education Center.

“The future of the Embry-Riddle Prescott Campus can’t be separated from the future of Prescott,” says Jim, who sits on the Prescott Campus steering committee for campus buildings and is a member of its board of visitors.

The center’s planetarium was recently named the Jim and Linda Lee Planetarium in the couple’s honor. The only Arizona planetarium north of Phoenix, it can seat 125 people for presentations in full 360-degree high definition. It is open to the pub-
lc and is designed for frequent community use.

“We are so pleased to have the support of this prominent local couple as we move forward,” says Prescott Campus Chancellor Frank Ayers. “The Jim and Linda Lee Planetarium will delight students and residents alike with a variety of presentations.”

Jim says he is excited to use the new state-of-the-art STEM Education Center and Planetarium, which celebrated its grand opening on Oct. 6, 2017, to bring more visibility to Embry-Riddle’s Prescott Campus and better link the community and local K–12 students with the university.

“There will be programs for the general public,” Jim says. “It is very important to bring students from the area to the university to see what is available.”

The two-story, $2 million STEM Education Center contains more than 20 laboratories supporting degrees in everything from aerospace engineer-
ing to biological biology. The center and planetarium will become a resource for local schools and an epicenter for community engagement events year-
round. “We are very fortunate and pleased to have Embry-Riddle in our community,” Jim says.
When Thierry Saint Loup (’98, DB) enrolled at Embry-Riddle’s Daytona Beach Campus, his sights were set on becoming a corporate pilot. He would soon discover he was destined for that and more — including a role in developing the university’s Eagle Flight Research Center (EFRC) and an engine that would power his world record-setting flight in 2016.

An Unexpected Detour

In 1998, Peter S. Piepont, then head of the engineering department at Embry-Riddle, received a call from a French company called SMA asking if the university would be interested in a research project involving a jet-fuel-burning piston engine for aircraft. The super-efficient engine had been developed by SMA with the help of some heavy hitters — including the Formula 1 engineering team from Renault Sport — but this project would mark the first time it was tested outside the company’s factory. SMA needed research to back its application on a variety of aircraft, including the development of a supplemental type certificate (STC) in the United States.

At the time, “engineering was not expected to be part of my career path,” recalls Saint Loup. “I wanted to be a pilot.” The French-born student had already earned his bachelor’s degree in aviation technology in 1999. In 2000, because of all the knowledge and experience I had acquired working on the program at the university, I was hired by SMA,” he says. “I ended up writing the engine installation manual, and the FAA approved the 230 HP engine installation on the Cessna 182 in 2006. We started doing engine conversions in the United States and the rest of the world.”

Setting a Record

Before the STC for the engine could be completed, though, the project returned to its home base — followed shortly thereafter by Saint Loup, who earned his bachelor’s degree in aviation technology in 1999.

“When I joined Embry-Riddle, I was working as a flight-test engineer for hybrid applications, as well as the pure generation of electricity in larger commercial aircraft. I wanted to be a part of that,” Saint Loup says. “The EFRC was a startup, blazing new ground, and I wanted to be a part of that.”

Fast-forward to 2016, when Saint Loup was contacted by Ross McCurdy, a high school science teacher and pilot who hoped to be the first to complete a coast-to-coast flight powered by biofuel.

“A slight mistake or a bad GPS recording and we would have failed. But everything lined up beautifully.”

Thierry Saint Loup, vice president of SMA Engines and director of Safran’s Flight Test Center in San Antonio, Texas, talks about his experience as a student at Embry-Riddle and his world record flight: lift-erau.edu/videos-spring-2018.
MESSAGE FROM THE ALUMNI ASSOCIATION

This past year has been iconic for our Embry-Riddle family. Our new president, P. Barry Butler, has been at the helm for 12 months now and counting. Under his leadership, there is a renewed spirit of collaboration and a positive energy infusing our campuses and strengthening the university’s global influence and reputation.

Welcoming New Alumni Around the World

New Embry-Riddle offerings remain focused on meeting the needs of the aviation and aerospace industries—worldwide. In December, we celebrated 30 new graduates of Embry-Riddle’s Worldwide Campus in Central and South America. Representing Brazil’s four major airlines, the students traveled to the Daytona Beach Campus to complete their professional aviation management program requirements and receive their certificates. The course was tailor-made to fulfill the growing demand for aviation professionals in Brazil.

Our Asia Campus in Singapore continues to grow in numbers and status. In December, the campus welcomed 112 new graduates, its largest graduating class to date. Since its first commencement ceremony in 2012, Embry-Riddle has conferred more than 360 degrees from its Singapore Campus. Both President Butler and Worldwide Campus Chancellor John R. Watret attended the momentous event. And in February, I had the opportunity to meet some of our distinguished Asia Campus alumni (See photo).

While our global focus is important, we’re not ignoring our industry’s needs here at home. A partnership between Embry-Riddle and Northrop Grumman that launched in January 2017 is filling an educational gap in the United States for airworthiness engineering (See Page 28). The wings of Embry-Riddle’s alumni network stretch far and wide. We are proud and we should be. Our graduates are in demand in all areas of expertise. Our alumni are leaders of companies, organizations, commands, projects and divisions that are keeping the world safe and taking us to exciting new horizons.

Calling All Eagles

We encourage you to stay connected and take advantage of our growing alumni base. This past year we brought more Embry-Riddle Eagles together than ever before, and we want to thank all who participated. I invite you to join us in 2018 at one (or more) of our 100-plus events. Find an upcoming event near you at alumni.erau.edu/events.

Respectfully and Forever an Eagle,

Bill Thompson (’87, PC)
Executive Director

OctoberWest and Wings Out West
PRESCOTT, ARIZONA

Oct. 5-7, 2017

Featured events included the Wings Out West Air Show with performances by Matt Chapman, Bill Stein and Skip Stewart, eagleNIGHT at the Hassayampa Inn, the 28th Annual Alumni Golf Tournament, the grand opening of the new STEM Education Center and the Jim and Linda Lee Planetarium, Friday Fair with fireworks, and the Chancellor’s Alumni Hall of Fame Reception and Awards Dinner.

Alumni Homecoming Weekend
DAYTONA BEACH, FLORIDA

Oct. 12-14, 2017

Highlights included a 5K benefiting the Ashley Guindon Memorial Scholarship, fly-in appearances by two F-16s, piloted by U.S. Air Force Lt. Col. Mike Driscoll (’97, ’11, DB) and Capt. Luke Weytmuller (’08, DB), among other aircraft; the inaugural Blue, Gold and Black Reunions; the grand opening of the Delta Chi Fraternity House; and a concert on the quad featuring singer/songwriter Rachel Platten.
Embry-Riddle and Northrop Grumman have teamed up to fill a national gap in the area of airworthiness engineering education through a unique professional program.

“It’s the first of its kind in the United States,” says Glenn Greiner, an associate professor of aerospace engineering and the program coordinator for Embry-Riddle. The Certificate of Study in Airworthiness Engineering (CSAE) launched in January 2017 and celebrated its first graduates this April. Created specifically to fill the needs of Northrop Grumman engineers, the 15-month program blends live and recorded online coursework. In addition to the certificate, students earn 12 graduate-level credits, which can be applied toward a master’s degree at Embry-Riddle’s Worldwide and Daytona Beach campuses.

“We are proud of the partnership with Northrop Grumman resulting in offering this innovative program,” says Maj Memirian, dean of the College of Engineering at the Daytona Beach Campus. The program is already earning industry kudos. The Engineers’ Council recognized the program and the Northrop Grumman/Embry-Riddle partnership with a 2017 Distinguished Engineering Project Achievement Award.

The plan is to possibly expand and develop the curricula into a full master’s degree in the future, Greiner says. While the first cohort of CSAE students were all Northrop Grumman employees, in January 2018 Embry-Riddle began offering the airworthiness engineering program to all students, regardless of employer.

A Timely Solution
Recent CSAE graduate Kurt Lawson, an engineering manager at Northrop Grumman’s facility in Rolling Meadows, Illinois, was already an Embry-Riddle graduate when he joined the program. He earned a bachelor’s degree in aeronautical engineering in 1993 from the Prescott Campus. Lawson says the CSAE was the perfect next step for his professional development.

“Until the CSAE program launched, there was no formal course of study in airworthiness. Our customers are placing increased emphasis on airworthiness as a separate discipline,” he says. “We need both broad expertise and up-to-date knowledge to execute these programs. CSAE offers a focused solution for industry to bring engineers up to that common baseline.”

The evolving airworthiness environment heightens the need for this type of training, Lawson adds. “Airworthiness has changed more in the last five years than the prior 20 years, so timeliness is critical,” he says. “During the CSAE program, the Federal Aviation Administration issued a major rewrite for airplane airworthiness standards (FAR Part 23) and issued Technical Standard Order - C211 for Detect and Avoid, which is a key technology for unmanned systems. The CSAE cohort covered both of these changes, literally, as they happened.”

Stephen Cook, Northrop Grumman technical fellow in the Northrop Grumman Office of Independent Airworthiness and the company’s CSAE representative, says Embry-Riddle was the “right fit” to customize and deliver the advanced education for their employees. “The vision of the program is to build a stronger airworthiness skillset by creating a more formalized airworthiness career pipeline,” he says. “We liked the fact that Embry-Riddle has a strong background in aviation and aircraft maintenance. That was a big differentiator for us.”

In addition, the university had a successful track record in establishing professional programs to meet industry needs. In 2010, the university launched a Multidisciplinary Master of Science in Engineering program that was tailor-made for Gulfstream Aerospace.

“We’re a global company,” Cook says. “From our perspective there was a gap in formal airworthiness education in the United States. This was an area in which we could show leadership and help to fill that gap.”

BY SARA WITHROW

Filling the Airworthiness Gap
Embry-Riddle and Northrop Grumman partner to enhance workforce education

COURTESTY NORTHROP GRUMMAN CORPORATION
Prescott Campus Pioneers
Two alumni honored at 2017 Chancellor’s Alumni Hall of Fame dinner

BY MELANIE STAWICKI AZAM

Laura Tyler Perryman (’88, PC) is one of the youngest graduates to have completed an undergraduate degree at the Prescott Campus. She earned her B.S. in Aerospace Engineering when she was just 19 years old. Both Teller and Perryman were inducted into the Prescott Campus Chancellor’s Hall of Fame on Oct. 6, 2017, during the annual OctoberWest Alumni Homecoming festivities. Prescott Campus Chancellor Frank Ayers established the Alumni Hall of Fame to recognize the significant contributions of prominent Prescott Campus alumni to their profession, the community, the campus and the university.

“I was unsure and I was leaving the nest,” says Teller, who is believed to be the first Navajo and one of the first American Indians to graduate from the Prescott Campus. “But I knew I wanted to go to school here.”

Ayers says both Teller and Perryman are examples of Prescott Campus alumni whose professional contributions are making a difference in their respective communities and industries.

“Arlando Teller’s outreach on behalf of Embry-Riddle and his stewardship of aviation within the Navajo Nation has been long-standing and exemplary,” Ayers says. “Perryman’s commitment to use the engineering skills she gained at Embry-Riddle to help others suffering long-term pain management issues is representative of the service our graduates provide to our nation and society as a whole.”

Before founding Stivmawne, Perryman was an executive working in the technology and internet sectors. She held engineering and program management positions at Rocketdyne, Seiko-Epson, Rockwell Semiconductors and Disney Imagineering, as well as completed professional career management consultancy engagements with Major League Baseball, Body Makeover, Suzuki, First Alert and Goldman Sachs.

After graduating from Embry-Riddle with a B.S. in Aviation Business Administration, Teller gained valuable experience managing multi-modal transportation projects for planes (airport planning at Phoenix’s Sky Harbor), trains (BART to San Jose), automobiles (corridor management plans), pedestrians (Safe Routes to School with Oakland) and marine transport (the Vallejo Ferry System). Teller grew up on the Navajo Nation in a single-parent household, alongside grandparents, one of whom was a World War II Navajo code talker. Wanting to return to the reservation to help his community, Teller began working in 2009 as a senior transportation planner for the Navajo Nation Division of Transportation.

“Success for me is really based on how I can improve technology to help others,” Perryman says.

Hall of Fame Distinction

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E m b r y-Riddle’s Golden Eagles are the winningest intercollegiate flying team of the last two decades, including 31 consecutive regional championships and 11 national championships. In honor of this record, the Prescott Campus flight team was inducted into the International Air & Space Hall of Fame at the San Diego Air & Space Museum on Nov. 9, 2017. Since 1963, the hall of fame has honored more than 200 of the world’s most significant pilots, crew members, visionaries, inventors, aerospace engineers, business leaders, preservationists, designers and space pioneers.

The current team has 27 active members, four coaches and one adviser.

“This honor recognizes years of sacrifice and hard work,” says Head Coach Sam Morris (’16, PC). “Teams throughout the years have truly created a legacy that each team is expected to uphold or raise. It means that the current and future teams are setting out to do what their founders desired and that they truly epitomize the creed they follow.”

Golden Eagle alumna William “Bill” Bayliss (’02, ’14, PC) would agree. He was chief pilot and president for the Golden Eagles in 2007 and 2008, when the flight team won its first back-to-back national championships. Bayliss was one of several alumni who attended the hall of fame ceremony in San Diego.

“It was an absolute honor to represent the team and all of the hard work, dedication and, of course, teamwork, that has brought 11 national championships back to the Prescott Campus,” Bayliss says. “We alumni are looking forward to the team winning the first three-peat [three consecutive championship wins] in a few months.”

Flying High
Prescott Campus Golden Eagles inducted into the International Air & Space Hall of Fame

BY JASON KADAH

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Making the Team
To become a Golden Eagle, applicants are required to go through a six-week tryout period. Upon selection, the team trains several days a week, as well as most weekends, for competition, which culminates with more than 30 collegiate flight teams ultimately vying to become the National Intercollegiate Flying Association’s Safety and Flight Evaluation Conference (NIFA SAFECON) champions.

“It was an absolute honor to represent the team and all of the hard work, dedication and, of course, teamwork, that has brought 11 national championships back to the Prescott Campus.”

— WILLIAM BAYLIS

“The common saying during our practices is ‘give it your all and then do a little bit more,’” says Ryan O’Connor, current Golden Eagles team member. “This mentality and the resulting tradition of excellence has been a common theme among every team member throughout the years.”

The naming of the Golden Eagles Flight Team to the International Air & Space Hall of Fame is an honor that is shared by the entire university community, says Prescott Campus Chancellor Frank Ayers.

“While the recognition clearly reflects the dedication and expertise of our flight team members, it also reflects positively on the commitment to excellence present across all disciplines at Embry-Riddle,” Ayers says.
Instead of Save the Date as the header, please make it: Make Contrails to Campus This Fall.
To share your Class Notes with Lift and your fellow alumni, join Embry-Riddle’s online community at alumni.erau.edu/join today; or submit your announcements through email to eralumni@erau.edu. For guidelines, visit alumni.erau.edu/notes_guidelines.

Career News

1970s

Phil Woodruff (’71, DB) received the National Aeronautic Association’s (NAA) Wesley L. McDonald Distinguished Statesman of Aviation Award at the NAA’s fall awards ceremony on Nov. 29, 2017. The award honors those who have made significant contributions to aeronautics in the United States. As director of education for the Federal Aviation Administration, Woodruff’s efforts led to the creation of new aviation education programs in every state, including opening more than 100 Aerospace Education Resource Centers for teachers and Aviation Career Education Academies for youth.

Mark Bushnell (’79, DB) retired from Continental Airlines/United Airlines, where he worked as an aircraft maintenance technician and a field planner for more than 27 years at Newark Liberty International Airport. Prior to Continental, he was in production support with Textron Lycoming in Stratford, Connecticut, for more than eight years.

1980s

Dennis Jones (’80, DB) was named managing director of the National Transportation Safety Board (NTSB). He is the first African-American to hold this post. He started at NTSB as an intern in 1979 and has investigated more than 1,000 aviation accidents, including Malaysia Airlines Flight MH370, which disappeared in 2014 over the Indian Ocean.

Mackenzie Ogweng (’83, DB) completed Embry-Riddle’s Aviation Safety Program Management and Aircraft Accident Investigation and Management professional courses. Ogweng is a board member of the Uganda Civil Aviation Authority.

C. Jeffrey Knittel (’80, DB) is chairman and CEO at Airbus Americas, located in Herndon, Virginia. Formerly chief executive of C2 Aviation Capital and president of CIT Transportation Finance, he brings more than 25 years of global aerospace leadership experience to the position. Prior to leading C2 Aviation Capital, Knittel served in a series of senior leadership positions at CIT Group since joining the company in 1986. Knittel is a trustee of the National World War II Museum in New Orleans, a member of the Board of the USO of Metropolitan New York and a member emeritus of the Wings Club Board of Governors. Previously, he also served as a member of the Embry-Riddle Board of Trustees.

1990s

Lt. Col. Todd Anthony (’90, DB) retired from the Air National Guard on June 30, 2017, after serving 26 years at three guard units. He flew KC-135 and A-10 aircraft. He now lives in Harrison Township, Michigan, with his fiancée, Jennifer Lepez. Based in Detroit, Anthony flies the A-330 for Delta Air Lines.

Retired U.S. Air Force Lt. Gen. William J. Bender (’90, WW) was hired as strategic account executive, government relations, for Leidos, a Reston, Virginia-based company that designs and develops high-tech products for national security, health and infrastructure industries.


Cedric Rockamore (’92, ’96, WW) was named vice president of American Airlines’ Dallas/Fort Worth (DFW) Hub Operations.

Ted Hartselle (’93, WW), who formerly worked on the space shuttle program, was recognized by the National Space Club Florida Committee for lifelong achievement and contributions to the U.S. space program. Hartselle worked from 1980 to 2011 on the program and was a contractor launch pad operations engineer. He is now a professor at Eastern Florida State College in Cocoa, Florida.
He is also a two-term councilman for the City of Rockledge, Florida, and the Lt. Governor for the seven Kiwanis Clubs of Brevard County.

Bongani Maseko ('13, DB) was appointed chair of Airports Council International. Maseko is CEO and executive director of Airports Company South Africa Limited.

Tora Gore ('94, DB) retired on Oct. 1, 2017, from the U.S. Air Force. Gore served as corporate liaison for the southeastern United States, which won a silver medal in the World Military Volleyball Championship in June. Gore is currently the only member of the 11-player team who is not a graduate of the U.S. Air Force Academy.


Joshua Kutryk ('13, WW) was named a new strata candidate recruit for the Canadian Space Agency. Kutryk is an air force pilot out of Cold Lake, Alberta. He will move to Houston to start a two-year training program.

U.S. Air Force Capt. Abby Hall ('12, DB) reenlisted in the Air Force, which won the Armed Forces Volleyball Tournament in Jacksonville, Florida, in May 2017, and played on the Air-Alled Forces Team, representing the United States, which won a silver medal in the World Military Volleyball Championship in June. Hall is a program manager and director’s action group chief at the Air Force Life Cycle Management Center at Wright-Patterson Air Force Base in Ohio. She is a former Eagles Volleyball player and 2017 inductee to the Embry-Riddle Athletics Hall of Fame. She is currently the only member of the 11-player team who is not a graduate of the U.S. Air Force Academy.

Lt. Col. Jaime R. Harvey ('12, WW) is the incoming president of the Aerospace Physiology Society. She is the executive officer to the U.S. Air Force chief of safety and branch chief at the U.S. Air Force Headquarers in Washington, D.C.

Marcos Bertanini ('13, WW) was promoted June 23, 2017, to international wide-body captain with Cathay Pacific Airways. Bertanini has been a pilot with Cathay Pacific in Hong Kong for more than 10 years and previously served as a Marine Corps officer and naval aviation projects at Fort Gordon with a projected investment of about $2 billion.

Astrid Zajdband authored German Rabbis in British Exile. From “Heimat” to the Unknown, published by De Gruyter Oldenbourg in 2016. Inspired by a book she inherited from her grandmother, which was published by a Jewish rabbi in 1935 in the midst of the Nazi regime, Zajdband explores the history of the German rabbinate, its exile to Great Britain, and the German-Jewish heritage and its influence on the Anglo-Jewish landscape today. Zajdband is an adjunct assistant professor for the department of business administration at Embry-Riddle’s Worldwide Campus in Berlin.
\textbf{Family News}

Melissa (Anqirovich) Ponikert
Burns (73, VW) and Frank Burns welcomed Isla Sky Burns on Nov. 5, 2017, at True to Life Birth Center in Oakland, Calif. Melissa is a professional aerobatic pilot, display skyliner and B.A.E. performer, and performs in airshows for audiences worldwide.

\textbf{Other}

First Officer Eric Sinn (‘95, DB)
Capt. Anthony Green (‘93, DB) and First Officer Costas Sippelis (‘12, DB) recently flew together on a long-haul United Airlines Boeing 767-400 flight. “While it’s common to fly with another MAU graduate, getting the ‘bat’ right of all of us has happened in a long time,” says Sippelis, who shared the photo.

Michael Des (‘97, DB)
director of flight training,
Stephanie Henderson
(‘97, N) and
Mohamed Farag
(‘15, ‘17, DB)
are alumni. They reconnected at the 2017 Daytona Beach Campus Homecoming Weekend in October. Borda is CEO of Inteflight Law and a Boeing 787-6 captain; Garcia is chairman and CEO of Inteflight Global; and Sheik is CEO of True Airways.

\section*{In Memoriam}

\begin{itemize}
  \item \textbf{1940s}
    \begin{itemize}
      \item Blaine Harris Schultz (‘43, BFS)
        Nov. 28, 2016
      \item Retired U.S. Air Force Maj.
        Charles “Chuck” Neyhart
        (‘56, MC)
        Sept. 14, 2017
    \end{itemize}
  \item \textbf{1950s}
    \begin{itemize}
      \item James A. Cooper
        (‘51, MC)
        Sept. 28, 2017
      \item Anthony M. Ungaro
        (‘56, MC)
        May 29, 2017
    \end{itemize}
  \item \textbf{1960s}
    \begin{itemize}
      \item Herman D. Fentress
        (‘66, DB)
        Sept. 14, 2017
    \end{itemize}
  \item \textbf{1970s}
    \begin{itemize}
      \item James A. Henderson
        (‘71, DB)
        Sept. 28, 2017
      \item John A. “Jack” Mcmillan
        (‘71, DB)
        Oct. 1, 2017
    \end{itemize}
  \item \textbf{1980s}
    \begin{itemize}
      \item Retired U.S. Air Force Maj.
        James L. “Larry” Jackson
        (‘84, ‘86, WW)
        Nov. 17, 14, 2017
        (‘79, DB)
        June 11, 2017
      \item Retired U.S. Air Force Maj.
        David Arlen Smeathart
        (‘91, WW)
        Sept. 28, 2017
    \end{itemize}
  \item \textbf{1990s}
    \begin{itemize}
      \item Retired U.S. Air Force Maj.
        George M. Noble Jr.
        (‘95, ‘96, WW)
        May 14, 2017
      \item Retired U.S. Air Force Maj.
        Benjamin Joseph Moore
        (‘91, PC)
        Sept. 29, 2017
      \item Retired U.S. Air Force Maj.
        Victor Ngie Ming Wong
        (‘13, WW)
        Sept. 14, 2017
    \end{itemize}
  \item \textbf{2010s}
    \begin{itemize}
      \item Retired U.S. Air Force Maj.
        Colton Butterfield
        (‘13, WW)
        Oct. 14, 2017
      \item U.S. Air Force Capt.
        Richard “Dick” Dollett II
        (‘93, WW)
        Sept. 4, 2017
    \end{itemize}
\end{itemize}

\section*{Help US MEMORIALIZE EMBRY-RIDDLE EAGLES}

If you know of any classmates who have died, or with any questions, visit alumni.erau.edu/passings

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\textbf{Marriages/Engagements}

\begin{itemize}
  \item \textbf{2000s}
    \begin{itemize}
      \item Jonathan P. Rupp (‘06, DB) and Isaac Harry were married on Nov. 11, 2017, at West Millford Farm in Cumming, Georgia. Rupp is a pilot for Jet Airways, a management consultant and translator for his family’s international business, Shutter & Associates.
    \end{itemize}
  \item \textbf{2010s}
    \begin{itemize}
      \item John Garcia (‘12, PC) and Cassie Lacey (‘13, ‘12, PC) were married June 5, 2017, in Tucson, Arizona. The couple met at Embry-Riddle Prescott Campus in 2009. Lacey graduated with a B.S. in Applied Meteorology and an M.S. in Aviation Safety, and Garcia graduated with a B.S. in Aviation Business Administration. Lacey played volleyball and Garcia was on the wrestling team. After college, the couple moved to Oregon for a few years, then moved back to Tucson. Lacey is an engineer at Raytheon and Garcia is a middle school physical education teacher.
    \end{itemize}
\end{itemize}
Thank You for Supporting Future Eagles Like Me.

“Thanks to the generosity of donors like you, I can realize my dreams and engage in experiences and opportunities that only Embry-Riddle can provide.”

Madison Dietrich
Class of 2020

Visit givingto.erau.edu to learn more about giving students a chance to realize their dreams.