ULA CEO on Jump Starting the Trillion Dollar Space Economy

The Northern Ohio Section (NOS) of the American Institute of Aeronautics and Astronautics (AIAA) held a virtual distinguished lecture on December 10th, 2020 with 58 people attending. The Chief Executive Officer at United Launch Alliance (ULA), Tory Bruno, gave the lecture on "Jump Starting the Trillion Dollar Space Economy." The lecture demonstrated how In-Situ Resource Utilization can create a self-sustaining Cislunar economy. He also provided an update on how ULA’s new Vulcan rocket and the Centaur V upper stage provides the necessary space transportation capability to achieve a sustainable Cislunar presence. Under Tory Bruno’s leadership, ULA is shaping the future of space launch by making it more affordable, accessible and introducing new capabilities to meet the challenges of the future.

The lecture presented the beginnings of a new economy with a permanent human presence on the moon. He described the capabilities of ULA enabling this future economy and a new age of exploration. Mr. Bruno was gracious with his time and enabled a lively questions and answers session with discussion on possible futures, how to make the economy sustainable, and the international agreements required to realize the future economy.

(Text: Joe Connolly; images courtesy of Tory Bruno)
This past year’s Regional Leadership Conference (RLC) 2020 was different than previous years in many ways... but mostly in increased participation! Holding RLC virtually literally tripled attendance over past years when the event was held in person.

We had 264 total participants throughout the seven sessions, with officer representation from all 57 of our professional Sections and numerous student branches.

The sessions initiated with a “Welcome and Kickoff” from the Regional Engagement Activities Division (READ) Leadership and AIAA staff on July 20. Special guests then explained what it takes to be a great volunteer leader and gave an overview of AIAA and organization success. Later in July, an informational session on “Officer Roles and Responsibilities” was well received with Regional Directors providing an overview of each region along with describing the duties of the regional Deputy Director (DD) and section officers. Additionally, officers were able to network with one another and share best practices.

The four August sessions kicked off with tips on “Exploring Outreach and Areas of Interest” to help increase member engagement, followed by an AIAA resource-oriented session to help Sections be successful. Also in August was a presentation on “Embracing Social Distancing and Going Online” to help us learn more about AIAA’s Engage platform, and how to set up a successful Zoom meeting. There was also an informational session on the Regional Student Paper Conference and the value of participating in them.

The last RLC session, held on September 1, highlighted Section awards as we congratulated the 2020 AIAA Section Award winners.

Overall, holding our annual Regional Leadership Conference virtually was a great success and allowed us to reach more members. Members can certainly expect to see a virtual component to be added to future RLCs!

(Text and photo: Peggy Cornell, Region III Director)

The Northern Ohio Section (NOS) of the American Institute of Aeronautics and Astronautics (AIAA) held a virtual distinguished lecture on November 5th, 2020 via Zoom with 48 people attending. Dr. Cheryl Bowman, a Technical Lead for Hybrid Gas Electric Propulsion under the Advanced Air Transportation Technology at NASA presented “Establishing Electrified Aircraft Propulsion Concepts.” In the mid 2000s, NASA challenged the aeronautics industry to identify the routes for achieving ambitious improvements in fuel burn, emission, and noise reductions. These so-called “N+3” studies explored the broad changes to take place over the course of three generations of commercial aircraft, or nominally 30 years, into the future. Many intriguing propulsion-airframe integrated solutions were proposed and pursued, which incorporated technologies such as high-aspect-ratio wings, boundary-layer ingestion, and hybrid electric power-trains. The balanced portfolio of concept studies anchored with practical technology development demonstrated that electrified aircraft propulsion is an aircraft revolution whose time has come.

The lecture was well received with a lot of engagement and discussion following the presentation. The discussion focused on future research paths for realizing the electrified aircraft revolution. Dr. Bowman has worked at NASA Glenn Research Center for 30 years conducting component-focused, structural materials research. She is currently the Deputy Branch Chief for the High Temperature and Smart Alloys Branch.

(Text: Joe Connolly; photo courtesy of Cheryl Bowman)
AIAA NOS Virtual Forum Experience: Propulsion and Energy/Electric Aircraft Technologies Symposium

The Northern Ohio Section (NOS) had several members attend the virtually held Aviation Forum and Propulsion and Energy (P&E) Forum last summer. The forums had shifted to completely virtual events out of concern for the health and safety of the forum participants and AIAA employees due to the Coronavirus (COVID-19). This change required a great deal of re-planning on the part of AIAA and its members. AIAA had to rapidly adjust their plans due to the global pandemic and the COVID-19 impacts to meet the June time-frame of Aviation. AIAA has learned from these experiences and has applied those lessons to later virtual conferences. This article outlines the attendee experience at the P&E Forum/Electric Aircraft Technologies Symposium (EATS) that occurred in August of 2020. While AIAA recognizes that face-to-face meetings are ideal for sharing research, ideas, and convening the community, the current challenges have relegated a virtual event format as the best opportunity for the AIAA community to meet and share information while also guaranteeing participant safety.

One of the most noticeable experience differences associated with the virtual event was the ability to have much of the technical content at the forum available on-demand. Attendees were granted access to the technical presentations about a week before the scheduled event and retained access for over two months afterwards. This increased access was a welcomed feature of the virtual forum. The scheduled technical sessions were modified so that instead of providing formal presentations of the papers, the authors were asked to provide a high level overview in 5 minutes or less. After each overview, the virtual audience was able to engage via voice and chat to ask questions of the presenter. This change in format allowed more papers to be presented in a given session.

Virtual sessions allowed going from one presentation to another easier without having to walk across a conference hall. However, this approach was lacking in the ability to facilitate the informal discussions and networking opportunities that often occur following technical sessions. Because the 5-minute overview with a single chart was brief, it was more difficult to understand and become engaged with presentations that the attendee had not watched prior to the Q&A session. For this reason, AIAA subsequently changed the format for the Science and Technology (SciTech) Forum in January of 2021. For that event, the authors recorded a 10-minute presentation to summarize their work, which was then played as part of the Q&A session.

The larger plenaries and forum 360 events were all well done with good audio/video clarity, interesting topics, and prominent experts in the field. The one downside to having these events held virtually, was difficulty in refusing regular work meetings and obligations. By not being physically away, it was much too easy to accept impromptu meetings and email requests. On the positive side, by removing some of the barriers to traditional forum attendance, including travel costs and time, the virtual forum format enabled greater participation and created opportunities to attract participants from outside the typical aerospace community. This increased participation has the potential to allow new ideas to reach a broader audience.

All in all, NOS is very grateful to AIAA for continuing with the forums using the virtual format instead of cancelling or greatly delaying the forum dates. The virtual experience allowed the aerospace community an opportunity to continue to exchange ideas, while remaining safe. NOS hopes for the continued evolution of conference formats to provide improved experiences as large in person gathering once again become an option.

(Text: Joe Connolly & Jonathan Kratz)

Sample on-demand paper presentation from the P&E Forum.
Frequent Flyer - AIAA Northern Ohio Section

March 2021

**AIAA Introduces High School Student Membership**

The AIAA recently launched the organization’s brand-new High School Student Membership category to help guide students in the early stages of their academic journey towards a rewarding aerospace career. The Northern Ohio Section is excited about this new opportunity to help shape the future of aerospace and would like to encourage our members to share this information with eligible students as well as educators with whom they are in contact.

AIAA High School Membership is free and includes benefits such as:

- Access to AIAA’s Engage community platform with connections to their Regions/Sections and a special high school members-only community
- Online subscriptions to the Aerospace America magazine
- Discounts to AIAA events, webinars, and on-demand content

Students are eligible beginning as early as 6th grade and continues through 12th grade. Those under 13 years old are eligible with a parental permission agreement. After joining, the high school members will be assigned a region and section and will receive a welcome email with all the details on their member benefits. Note that AIAA is compliant with the Children’s Online Privacy Protection Act (COPPA) rules.

Find more information on becoming a High School Member at:

[https://www.aiaa.org/membership/types-of-membership/high-school-student-membership](https://www.aiaa.org/membership/types-of-membership/high-school-student-membership)

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**AIAA NOS Announces Young Aerospace Visionaries Contest**

The AIAA NOS is excited to announce the first ever Young Aerospace Visionaries Contest for K-12 students. The objective of this contest is to ignite or strengthen interest in STEM, particularly as it relates to the field of aerospace. Students are invited to use their imaginations to push the boundaries of what is possible in the future, in order to create a visual depiction of their futuristic vision of air or space travel technologies. Each visual submission is to be accompanied by a written essay describing the student’s vision, providing rationale for it, and giving some background about their interest in the field of aerospace. There are different grade ranges for judging of submitted projects, and the contest guidelines and judging rubric vary based on the student’s grade level. Awards will be offered to the top three submissions in each grade level. The deadline for submission is April 30th, 2021.

NOS members are invited to forward this contest announcement to student-age family members and friends, as well as to teachers and educators. Additional contest information may be found at:

[https://engage.aiaa.org/northernohio/stemk12/yavc](https://engage.aiaa.org/northernohio/stemk12/yavc)

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Artwork: Artist concept of future urban air transport (Image credit: NASA).
AIAA NOS Annual Honors & Awards Event

On September 23rd, the AIAA Northern Ohio Section held its annual Honors & Awards Event, with hosting duties by the Honors & Awards Chair, Bill Marshall. Normally, this event coincides with a summer picnic and gathering in August, but owing to the desire to maintain appropriate social distancing, the event was reimagined as a virtual event for 2020. Instead of an in-person gathering and meal, the event was presented as a Zoom conference.

The event started with a few words from Section Chair, Christie Pastor-Barsi, and followed by recognition of the prior year and current year section officers. Bill then conducted the attendees through a short “Trivia Challenge” comprised of 10 questions related to AIAA, NASA, and Ohio aerospace history. Next, the recognition of awards was presented. For 2020, the NOS recognized two Section Awards, four “Best Papers”, two Associate Fellows, two Fellows, three Sustained Service awards, and the recipient of the John C. Ruth Digital Avionics Award. Following awards, Bill presented the answers to the trivia challenge, and then the attendees spent a little time socializing over virtual ribs, burgers and hot dogs. Despite not being able to gather face-to-face, the attendees had a great time socializing and celebrating the achievements of their friends and colleagues.

AIAA NOS Earns Section Awards for 2020

For 2019-2020, the NOS Section earned two Section awards. The section awards honor particularly notable achievements made by member sections in a range of activities that help fulfill the Institute’s mission. Section awards are given annually in five categories based on the size of each section’s membership. Each winning section receives a certificate and a cash award. The award period covered is 1 June 2019–31 May 2020. The Institute believes that vital, active sections are essential to its success. The two awards NOS earned for 2019-2020 were for Communications and Public Policy.

The Communications Award is presented to sections that have developed and implemented an outstanding communications outreach program. Winning criteria include level of complexity, timeliness, and variety of methods of communications, as well as frequency, format, and content of the communication outreach. For the Northern Ohio Section, the 2nd Place Award was given to Edmond Wong, Communications Officer.

The Public Policy Award is presented for stimulating public awareness of the needs of aerospace research and development, particularly on the part of government representatives, and for educating members on the value of public policy activities. For the Northern Ohio Section, the 1st Place Award was given to Victor Canacci, Public Policy Officer.

Congratulations to the winners and all the officers of the Northern Ohio Section for the hard work and dedication they provide to the section.

AIAA Announces Class of 2021 Associate Fellows

On September 28th, the AIAA announced its list of Associate Fellows for the Class of 2021. The grade of Associate Fellow recognizes individuals “who have accomplished or been in charge of important engineering or scientific work, or who have done original work of outstanding merit, or who have otherwise made outstanding contributions to the arts, sciences, or technology of aeronautics or astronautics.” To be selected as an Associate Fellow an individual must be an AIAA Senior Member in good standing, with at least twelve years professional experience, and be recommended by a minimum of three current Associate Fellows.

This year the AIAA Northern Ohio Section is pleased to include three recipients of this distinguished honor. They are:

- Clifford Brown, NASA Glenn Research Center
- Joseph Connolly, NASA Glenn Research Center
- Peggy Cornell, NASA Glenn Research Center

Associate Fellows are traditionally recognized formally as part of the AIAA SciTech Forum in January. The full press release of Associate Fellows can be found at:


In the meantime, please join NOS in congratulating these members for their noteworthy and splendid achievement. These members were also recognized locally during the annual Honors & Awards event held virtually in September.

The distinction gain with each membership advancement earns the respect of peers and employer – and bolsters the members reputation throughout the industry. For those interested in advancing their grade of membership in AIAA, please visit [www.aiaa.org/honors](https://www.aiaa.org/honors), or reach out to Bill Marshall, Honors & Awards Chair ([aianos.awards@gmail.com](mailto:aianos.awards@gmail.com)), who can assist members with a nomination package.

(Text on this page: Bill Marshall)
AIAA NOS Inspires Young Minds During the Pandemic

Last spring, the AIAA Northern Ohio Section (NOS) announced a student competition backed by sponsored awards with the intent to inspire young folks dealing with the challenges of the COVID-19 lockdowns. As the measures to flatten the curve called for a rapid shift to remote learning, among other restrictions that limited social, work, and educational activities, the NOS stepped up to offer an educational outlet for students across Northeast Ohio. In doing so, the hope was to create a channel through which students, their parents/guardians, and their teachers, could enhance their learning/teaching, inspire one another, and have some fun.

The NOS STEM Outreach Officer, Jonathan Kratz, spear-headed the competition with significant contributions from other AIAA NOS members including Ashlie Flegel and the NOS Communications Officer, Edmond Wong. The NOS Chair, Christie Pastor-Barsi, and Vice Chair, Joe Connolly, were also helpful in bringing this competition to life.

The challenge consisted of a variety of tasks that were posed to the students. Tasks included the construction and testing of a multi-stage balloon rocket, a balloon rocket car, a paper bridge, a planetary lander, and a glider, among other tasks. These projects and experiments were created to mimic real world engineering problems related to the aerospace field, while also teaching fundamental science and engineering lessons. In addition, they are quite fun!

The NOS offered cash prizes to participants, including an offer of $20 to the first 10 students to tweet a video response of their successful project to the NOS Twitter account @AIAANorthernOH. In addition, a $100 prize was awarded to the overall most creative project and video response as judged by the members of the AIAA NOS council.

The experience of Jason Fan, a student from the Rocky River school system, is worthy of mention. Jason was encouraged by his gifted program teacher, Mrs. Muccio, to participate in this challenge. He was further encouraged by his mother, Shumei Man. Jason rose to the challenge and ended up completing 5 different tasks. Not only did he complete so many projects, but he did them very well. His completion of the balloon rocket car project and video response was awarded the grand prize. Jason can be seen focused in on demonstrating his successful projects in the accompanying photos. The interest and enthusiasm that drove Jason to complete so many tasks, and do them well, is a clear indicator of the makings of a future engineer, scientist, or technology specialist. Jason’s mother thanked the NOS for “inspiring my kid’s curiosity, imagination, creativity, and persistency”. Jason said about his experience, “It is fun. You should do it!”

AIAA NOS is dedicated to inspiring young people by getting them engaged in STEM activities. The section sponsors special awards at the local science fairs, and encourages young people to participate in those fairs and to consider picking aerospace related project topics. NOS also organizes an annual event called Young Astronauts Day (YAD), which has been very successful in the past. Plans for holding a similar competition in the future are being considered, as well as providing other new opportunities to connect young people to STEM. Members are encouraged to share this experience and information with their student and educator contacts, and to tell them to take Jason’s advice, “You should do it!”

(Text: Jonathan Kratz; photos courtesy of Shumei Man)
Northern Ohio Section Officers and Council Members (June 1, 2020 – May 31, 2021)

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For additional information about section activities visit: https://aiaanos.org