

Cat Hofacker: Good morning, good afternoon or evening to you all wherever you're tuning in from my name is Cat Hofacker and I am the staff reporter at Aerospace America, AIAA's flagship magazine. I'm joined today by George Nield, one of two candidates for AIAA president-elect in the upcoming 2021 elections. Thanks for joining me today, George.

George Nield: Thank you, Cat. It's a pleasure to talk to you today.

Cat Hofacker: Great, so we have a lot to go through of course, but I wanted to kick it off with where it all began. Why did you get involved with the AIAA back when you were a student at Stanford University?

George Nield: So when I was in college, I think there was an expectation within our industry that people who really were interested in and cared about aerospace items would belong to the professional society and AIAA is the world's largest aerospace professional society. And certainly, my professors encouraged all of us to become part of that as a good thing to do throughout their careers.

Cat Hofacker: Definitely. Now from member to fellow, you've held various roles in the technical committees and of course you're also on the Board of Trustees. Now you're looking to add president-elect to that career. As special as all the presidents are, the next one will have an interesting place in the institution's history given not only the incredible maturation of technologies happening in the field, but now also the additional challenges that the covid-19 pandemic have introduced. So what do you see as the role of the president in this moment in time, and why are you the right person for that role?

George Nield: Well, let me start by saying that this is certainly a very exciting time for aviation and space. There's just so much going on right now, and as the world's largest aerospace professional society, the AIAA and its members are right in the middle of the action, which is wonderful. It's important to recognize, though, that we also have some very significant challenges. Perhaps the single most significant challenge facing AIAA today is the continuing decline in our membership numbers. Our professional membership today is down more than 10% from what it was five years ago. It's down more than 25% from what it was 10 years ago. And it's down more than 30% from what it was back in 2006. Even more troubling is the aging of our membership. Believe it or not, we have more members that are 80 years old or older than we have under the age of 30. So these are urgent and important issues and they are worthy of our attention as an institute, but I am confident that with the right kind of leadership we can work together to do what we need to do to get things back on track. That would definitely be a priority for me as president, and that's why I'm volunteering to serve.

Cat Hofacker: So in the last several months, especially heightened by the pandemic, Dan Daumbacher has been really great about forming the discussion around the idea that AIAA needs to skate not to where the puck is now, but where the puck is going to be. That's going to require a lot of changes, so what do you think those need to be and what does AIAA need to be in the future?

George Nield: I really like the AIAA tagline: shaping the future of aerospace. And as I think about what I would want AIAA to look like in the future, I've identified four top-level goals that I believe capture what AIAA is all about and that will enable us to be successful in shaping the future of aerospace. First would be "advance the aerospace profession," and by that I mean push the state of the art; expand the envelope; discover; explore; use new technologies to deliver benefits to society. Second would be "engage and support our members." So first of all, grow our membership and then help them to become lifelong learners. Offer career development advice, recommendations and opportunities. Provide recognition for their accomplishments and enable the development of a network of friends, colleagues and acquaintances. Third would be "educate the general public." That means communicate with the media; local, state, federal and international government officials; and the public at large to assist them in understanding the importance of aerospace for national security, technological leadership, economic competitiveness and our everyday life — including how we travel, communicate, navigate, predict the weather, grow crops, make financial transactions and even watch livestreaming videos from the other side of the planet. And then finally, "inspire the next generation." I'd like to see us use the wonder of flight and the captivating nature of space exploration to gain the attention of students and to assist teachers and educators in order to make sure that we will have a motivated and capable aerospace workforce in the future.

Cat Hofacker: So let's zoom back to get the 10,000-foot description of your platform. Do you see this as a new vision for AIAA or implementing one that already exists?

George Nield: I like the purpose of the organization and how we have articulated what we're trying to do, but at the same time, the world is changing. So let's think about that for a minute. Some of the changes we're seeing are a result of advanced technologies and new ways of doing business in the aviation sector, we are seeing the proliferation of drones being used for a variety of purposes; promising developments in urban air mobility vehicles and renewed interest in hypersonics. In the space arena, private industry has now demonstrated the capability to carry NASA astronauts to the International Space Station; suborbital human spaceflight both for space tourists and for scientific researchers finally appears to be right around the corner; and we're seeing thousands of small satellites being launched as part of megaconstellations that will bring internet connectivity to the entire world and provide any other innovative services. Other changes that we're seeing are based on the devastating impact of the coronavirus, along with the resulting economic downturn. So pull all those pieces together and what we find is that all of us are having to modify how we communicate, how we share information, how we learn, how we shop, how we do business, whether we want to or not. And professional societies are not immune, so at AIAA we need to do our best to respond to those changes in a positive and proactive way and to be willing to make additional changes ourselves in what we do and how we do it.

Cat Hofacker: Right. So I've pulled out some elements of your platform I want to ask about, but first I wanted to get a sense of the priorities. Is there one of those four goals you consider most important?

George Nield: I view that as a sort of structure and a description of what AIAA is all about. If I had to pick one single priority for me, it would relate to the membership, and again, what that is all about. I'm a big fan of Jim Collins, who wrote "Good to Great" and "Built to Last," and he noted in his research that when he studied the great companies and the great organizations, they had a tendency to select very ambitious goals for themselves. And he put a name on that. He called them BHAGs: big, hairy, audacious goals. Some examples of that would be the U.S. decision to fly astronauts to the moon and then return them safely to Earth within a decade. There are other examples, too. Boeing had been very successful in World War II in developing and building military aircraft, but they did not have any history in building commercial airliners. But back in the 1950s, the leader of Boeing basically bet the company by investing a huge amount of money into the development of the Boeing 707. That was a huge risk because they did not have any kind of history or reputation doing that kind of thing, and now as a result that led to the 727, 737, 747 and all the other very successful aircraft that have been developed by them over the years. Other examples: Microsoft, the founders Bill Gates and Paul Allen decided an appropriate goal for Microsoft would be to put a computer on every desk and in every home. When they said that there were only about 1 million personal computers in the whole world, and today there are more than 2 billion. So those were classic BHAGs, and they were very, very ambitious, audacious. It wasn't clear how that would be successful, and yet it turns out that can be very motivating and really capture the attention of the employees and customers and stakeholders as they potentially react to or work with that organization to make it happen. So back to AIAA, I would love to see us pick some BHAGs, and the top one for me would be let's double our AIAA membership within the next five years. We've got a strategic plan and it's pretty much "well, let's keep doing what we're doing and maybe we can increase it by 3%." And again, that's not been very successful; we've been on a downward track for over a decade now. And people are working hard and they're trying to do that, but I don't think we analyze all of our options, all of our decisions, all of our activities based on this overarching goal, which would be very challenging, but I think it's possible. Let me tell you why: according to [Aerospace Industries Association](#), there are about 2.4 million people in the United States who work in the aerospace and defense industry. Now, AIAA currently has about 20,000 professional members, so less than 1% of the target population belongs to our organization. And the publication Industry Week says that if you look at the largest aerospace manufacturing companies in the world today -- they are Boeing, Airbus, United Technologies Corporation, Lockheed Martin and Northrop Grumman Corporation -- altogether, those five companies employ more than 643,000 people. If we could convince just 10% of the workforce at those five companies to fill out an application, AIAA would more than double overnight. So I think this is possible if we can just figure out how to do it. One of the other aspects of this is: What really is the target market for AIAA? Somehow, I think people have gotten the impression that AIAA is primarily intended for aerospace engineers, and that's part of the answer. But if instead we were to think of AIAA as being the professional society for people that know about, work in or are interested in aviation and space, it could significantly change how we operate. So I think that would be a really major shift in how we've thought about ourselves, but it could open up a lot of opportunities. So again, between companies both in the U.S. and around the world, dependents and agencies in the U.S. government that are responsible for aviation and space –

Air Force, Space Force, FAA, NASA; there's 600,000 active certificated pilots in the U.S; there's 193,000 aircraft mechanics and service technicians; there's 23,000 drone operators. If you look at other organizations, the Aircraft Owners and Pilots Association has 384,000 members; Experimental Aircraft Association has 220,000 members. So I just don't think we're thinking big enough. If we open up the aperture a little bit and think about all those people who potentially would be interested in and could benefit from working within AIAA, it could completely change how we do business and what we're able to accomplish.

Cat Hofacker: In the membership vein then, your candidate statement noted particular emphasis on student and young professional members. AIAA has struggled in transitioning student members to professional membership, so how do we get them and keep them?

George Nield: So why do we focus on them? Because that's the pipeline for bringing forward people who are interested in aviation and space. And you know, frankly, we do a pretty good job of getting students involved. There's like 8,000 AIAA student members, 200 AIAA student branches around the world, so that's not too bad. I think we could do better, and if there maybe was a more deliberate campaign to go out and recruit colleges, universities and other academic institutions, then we might be able to grow that number more. Where we're falling short is, as you mentioned, that transition. For whatever reason, after graduation, we are just not capturing those students in the AIAA professional membership category. In fact, my understanding is only about 20% of those students end up becoming professional members. Now, AIAA has tried some things over the years, like "we will reduce your dues for a couple years and then you can pay the full rate." Again, I'd like to think about other ways of doing business. Whether it's good or bad or right or wrong, I think today a lot of people struggle with writing a big check once in a while to belong to this organization, especially if they don't directly see the benefit for that. And so if we can figure out other ways to build our dues structure, then I think it might have huge results. So I recognize that it does cost money to have staff and to put out products and services like the magazine and certainly websites and so forth, but once we've got those in place we're seeing now, especially in the covid area, that the incremental cost of putting somebody on email distribution lists, of allowing them access to websites, of inviting them to participate in virtual conferences has got to be very, very small. And so if instead we can bring thousands of people now from all over the world who are able to directly benefit from being part of AIAA instead of thinking "well, my employer is not going to pay for me to travel across the world or across the country to attend the conference, and if I can't be there, I'm losing most of the benefit." So I'm interested in seeing if we can knock down some of those obstacles that are either preventing someone from being a member in the beginning, or we're teaching them a new habit that says "no, this is not just something to do while you're student, to go have a pizza and listen to somebody talk. This is a lifelong learning opportunity." It is an opportunity to help your career and to continue to advance in something that they probably really are interested in, which is why they signed up in the first place.

Cat Hofacker: Yeah, along the lines of knocking down those barriers, we've seen the last few virtual conferences the offering of on-demand content and changing how technical sessions are

presented, for example. What do you think of the efforts made so far? Is this helping drive more people to the organization, or what else do we need to do?

George Nield: I'm very pleased and excited. Again, it's been a huge amount of work and effort and frustration in trying to, overnight, change all of our detailed plans for conducting the major conferences. But I choose to look at the glass half full and think about the opportunities that this is providing for us. We're learning how to do this, and I think already we've been successful at being able to engage a much larger number of people in our meetings, in our ceremonies, in our gatherings than we ever could have before. So that doesn't mean we should never do that again. There's always going to be something to be said for the in-person interaction, but I think this is offering us an opportunity to change how we do business, to offer different kinds of products and services, to really accelerate the capability of offering online products and services to people all around the world that we might not have thought about doing before, or at least this quickly.

Cat Hofacker: Related to that, your platform has a line about AIAA enhancing its technical capabilities. Do you mean that in the sense of content, such as virtual offerings, or content as in subject areas?

George Nield: A little bit of both. Again, I think our technical reputation is first-class, and regardless of whether as many people as we think should join actually do, we have a great reputation for doing good work and having high-quality journals and conferences and information. That's great. We don't want to mess with that. At the same time with new technologies, new discoveries, we might consider how to accommodate new pieces of the puzzle, subjects that we haven't really dealt with in the past. The whole idea of urban air mobility vehicles or megaconstellations, the space traffic management, drones. I know we've been thinking about working with that for a number of years now, but there's a lot of work to do and it's being done so why shouldn't AIAA be part of writing the standards and working with the government and companies and academia to really make progress in a much more timely fashion? That's the kind of thing I would say we need to refresh and be willing to expand and, frankly, be more agile. I think one of the improvement categories that we have with AIAA is, like many government organizations, we tend to be pretty slow and methodical. We will bring up a subject and then at the board we will say "why don't we form a committee to go look at that?" and then at our next quarterly meeting we'll talk about it and then we'll take a vote, and then we'll go back and turn to staff and ask them to lay out a plan. So it can end up being a year or a couple of years before we turn this great idea into an actual activity. What we're seeing in the world of entrepreneurial activities, in the aerospace community and other areas is the world is not waiting anymore. It's going to keep on moving at breathtaking speed, and so if we want to be out there in front of the parade, we're going to have to figure out how to make decisions and implement things more quickly than we've ever done before. That's risky in that some of those ideas may be not successful, but going back to Jim Collins, some of his advice is basically "do lots of stuff and keep what works." Recognize that not every program, not every initiative is going to be completely successful, but that's going to be the key to staying in front in terms of providing this leadership opportunity, to shape the future of aerospace, right?

Cat Hofacker: Can you lay out a few concrete steps to being more agile? For instance, do we need to eliminate some layers of bureaucracy or really push a different way of thinking?

George Nield: It's certainly challenging, and we need to think about that and talk about it. But it basically is going to come down to lowering the bars of granting permission, of trusting the different parts of the institute. We've got sections, we've got regions, we've got technical committees and program committees and so forth. Almost all those people are volunteers, and so if we as an institute can give permission within some reasonable guidelines in terms of law and policy and what AIAA is all about, let them try. Say yes. One of the challenges that the government has had lately is if you try to work your way through bureaucracy, it takes forever, and so there's all these different people at different levels that have the ability to say no to something, but there's nobody that can say yes and have it happen. To the extent, maybe not all these ideas are going to work for an organization like AIAA, but I really think we have a lot of flexibility, and so with energy and goodwill among all the participants, I think if we just consciously decide "we're going to try to do a lot of different things," hoping that some of them will work really well. Some might need some mid-course corrections, and some of them frankly won't work and that's OK." We'll close them down as soon as we recognize that that's not a good fit, fight?

Cat Hofacker: Right. So in my job, you have to be aware of a broad range of topics and how they all rely on each other, and it's always in the back of my mind the possibility of being spread too thin. That also applies to AIAA as an organization with expanding our technical capabilities, so how do we strike that right balance of expanding the topics and people who are involved without losing our bread and butter of core topics?

George Nield: That's certainly a challenge with what we need to do, but to the extent that we can change our mindset of roles and responsibilities – again, AIAA headquarters can be setting the policy and the general direction and the strategic vision and so forth, but we're going to turn loose the decisions about which technical committees do we need and how quickly can we hold a workshop or put out a website or things like that instead of thinking, "well, we've got to have paid staff members doing all this, and it has to go to the board in the springtime, at our next meeting," and so forth. If we can just figure out how can we knock down those barriers so that we can make changes and try things without it being something that we fear. It's OK if something isn't a 100% success, but we need to keep trying things. If we're just going to sit here and wait until everything is perfect, it's going to be very difficult to succeed or to keep pace with the change that we're seeing the world, right?

Cat Hofacker: That idea of the 80% solution. It's not 100%, but it's better than nothing. So that raises the question in my mind of if we accept everything isn't going to work, what should be the metrics for success?

George Nield: This is a membership organization, and so that's an excellent metric in terms of not only how healthy the organization is, but also what kind of influence it can have and what it

can accomplish. One person, no matter how many hours per day and how many days per week, is not able to do everything, and so just by having more people in this tent of the aerospace community -- and kinds of people too. It's not just aerospace engineers, and electrical, mechanical, and civil. It's policy analysts, it's air and space lawyers. It's the mechanics and technicians, it's the educators. All different kinds of people that are very much part of our aerospace community. That is probably one of the best metrics we can have. We certainly want to be financially responsible, but I think there's a real danger there in looking at how much profit are we making or how much do we have in the bank -- that is not what AIAA is all about. If somebody wants to have a big return on investment, they should invest in some other entity rather than an organization like AIAA. You can measure our impact by the feedback from the members and how many members we have; we can measure our influence and impact and success by how often we are asked for our opinion and advice by Congress, by the White House; the kinds of events that we're able to hold internationally and the stature that we are held in the rest of the world community. So certainly reputation and the number of members and our real accomplishments in terms of the kinds of advances that we're able to facilitate or enable through prizes or events or papers are the recognition that we give to are good performers. All those things are ways to measure our success as opposed to just how much money do we have in the bank.

Cat Hofacker: I wanted to dig into the partnerships idea a little bit, one you also floated during your 2019 candidacy. So who are a couple of those organizations you'd like to see AIAA work with, and how? What are the areas we should focus on?

George Nield: I'd certainly start with that entities that we have strong relationships with already. So our AIAA corporate members, we already have a relationship, but I want to open it up and talk about is it all that it can be? For example, I think companies who have been strong supporters of AIAA have given grants or donations to the institute in the past, and sometimes they've paid for a certain number of their employees to be members. That's good, but again, is there a different way to structure that, such that if you're a member of the staff at one of these companies -- if you are an employee of Boeing, you're who we're looking for -- so automatically, you can be part of AIAA. We just need your name and email address and so forth, and we'll work out details on if we really have to charge people and if so how much, OK. But it doesn't have to go through their corporate front office and say, "Oh well, I'm sorry, we can only afford to have 6,000 of our employees be members of AIAA." Why don't we have a full 144,000 people from Boeing? They're in the middle of aerospace; they're building airplanes; they're making spacecraft; they're launching things. We want that whole community. So we start with the corporate members. Let's figure out what kind of relationship would be mutually beneficial to the company in terms of giving experience and opportunities to their employees to become leaders and volunteers and make a difference in technical conferences and running papers and so forth, but also to AIAA by having more people in the tent that represent all different parts of aerospace. Next group would be the government entities; that there are certain limits on, well, they can't pick out one organization to sponsor or promote. I get that. But again, I think AIAA has the capability to provide incredibly beneficial training, growth and experience for individuals that the government would benefit from. And so don't have to say

that they recommend or they automatically sign you up but is there some kind of relationship we can figure out how to do with lawyers on both sides that would say “yes, let’s have this informal partnership.” People who work for NASA, people who are in the Space Force, people who are employed by the FAA or other similar government organizations have this natural affiliate organization, AIAA, that they can be a part of, and it’s a good thing for them to do that instead of being viewed as “well, that’s taking away from your job at your desk.” Then there’s all kinds of other groups like those for pilots, aircraft mechanics and technicians, hobbyists. People who belong to these other interest groups like the Aircraft Owners or Experimental Aircraft and so forth, Airline Pilots Association – those are not professional societies, but they have to do with aircraft and space, and so I think there’s some potential mutual benefit and how could we work together in terms of we do what we do and do it well, and they benefit. They have access to some of our activities and our products and services, and potentially they become part of our membership pool as well. It can be a real win-win, situations that have been competitive. “I only belong to one thing and I have to decide which it is.” Let’s change our thinking on that.

Cat Hofacker: Right, it all goes back to membership really. Another question is your platform mention that AIAA has some work to do on demographics. Expand on that: Where are we behind the industry as a whole?

George Nield: We need to do a better job of gathering information first. I don’t think we completely know all the stats on all of our members, but to the extent that we do have data available, a couple things jump out to me. As of now, 91% of AIAA members are male. 9% are female. Something’s wrong there. If you look at aerospace engineers, it’s not great, but at least 15% are female. In the labor force altogether it is more like 47%, so what do we need to do to fix that? It can go back to the pipelines. It can go back to having a welcoming and supportive introduction to the organization at the very beginning, and it doesn’t even have to start in college. I think AIAA can do a lot more in K through 12 as well in terms of “hey, this is the place. You like space stuff, you like airplanes? This is where you can learn about it and here are the ways it can help you throughout your life and throughout your career, even before you to get college.” In terms of other demographics, pretty small percentages in terms of Black people and Hispanic people, other minorities, and I think we need to address that because they are definitely going to be a part of the workforce we need in the future. So how can we make sure they are part of AIAA and that they feel supported and embraced and welcomed in our organization?

Cat Hofacker: Right. So how do you prioritize diversity and inclusion efforts like AIAA has been putting more emphasis on lately?

George Nield: You can organize it different ways, but again, to me, it all comes back to membership. We want more people, and we want all kinds of people, and how are we going to do that? There might be certain things we do to address having more women members, certain things we do to address more minorities, certain things we do for young people versus people

later in their careers, but that's all part of how do we reach out to the community and welcome them in the tent?

Cat Hofacker: So final question. For those members who remember your 2019 bid for president-elect, what's different in your platform this time?

George Nield: I have been a member for 45 years and have tried to perform in whatever way I could to support the institute, whether that was being a science fair judge or be the webmaster for the Houston section. I was the section chair for two terms in Houston section, was the section chair for two terms in Houston and ended up winning the Outstanding Section Award both times. Been on a technical committee, then a faculty advisor to the U.S. Air Force Academy student branch when I was assigned there, and then served a couple terms on the AIAA Board of Directors and then currently as a member of the Board of Trustees. There's lots of ways for people to help, and AIAA is primarily volunteer organization. At this point in my life and career, I have had the wonderful opportunity to see all different aspects of the aerospace community: government, industry, academia from many different levels. I think that has put me in a position about some of these issues and maybe have some productive conversations about how we can strengthen our relationships and make improvements, and what we do and how we do it in a way that perhaps other people aren't able to do as well. We got fantastic people in the AIAA, but right now these are not ordinary times, and in some of these issues we've been talking about I think they deserve attention. I feel like I would be able to bring about some of the changes that are going to be necessary for us to be successful in the future.

Cat Hofacker: To wrap it all up, why does the aerospace community still need AIAA?

George Nield: The opportunity exists for us to shape the future of aerospace rather than just stepping back and letting it happen, good or bad, right or wrong, at its own pace. We can be leading it. And that to me is the key as I think back on my many years in the AIAA. For me personally, it has had a number of benefits. It's enabled me to get information not only about the latest technical developments, but the status of launch vehicles and aircraft designs and so forth. It's enabled me to really become a lifelong learner many years after I left school, between going to lunch and learns or listening to speakers at conferences, taking factory tours and field trips, reading journals and articles. And then finally, building a network of relationships with colleagues, acquaintances and fellow members of AIAA that has just been a fantastic thing in order to have someone you can call on for advice or help or be aware of what's going on in different organizations, in different parts of our industry, and have those just be lifelong and very satisfying relationships. I'll just close by saying AIAA is an outstanding organization and it has the potential to really make a difference in the aerospace community and for society as a whole, and I believe that my education, technical and management experience, leadership ability and extensive involvement in AIAA activities over the years have prepared me well for this opportunity and I would very much appreciate having the chance to serve.

Cat Hofacker: Thank you so much for your time, George. Excerpts from this interview will be available in the Aerospace America January 2021 edition — both in print and on the website. A full transcript of this interview will also be posted on the website. Thank you.