

March 17, 2021

From: Dr. Tim Holt, FRAes, C.M., Dean  
Mr. Steven Schmidt, IAB Chairman  
To: College of Aviation/IAB Board Members  
Subject: 2021 Industry Advisory Board (IAB) Narrative  
Enclosed: (1) Board Agenda, (2) Session Questions & Notes

**ATTENDEES:**

Fixed Wing

Bob Braceland - Raytheon Technologies  
Jacob Clymo - United Airlines  
Ryan Crowl - Loyd's Aviation  
Roy Evans - Delta Propel College Liaison  
Sam Morris- Planet 9  
Scott Nutter - Delta Air Lines (Ret.)  
Bob O'Neil - Southwest Airlines  
Stephen Rocha - Air Line Pilots Assn, Intl.  
Lisa Solitario - American Airlines  
Sergio Sovero - Delta Airlines  
Kevin Wilson - Mesa Airlines

Helicopter

Seth Buttner - Airbus Helicopters N. America  
Rob Willis - Integration Innovation

Meteorology

Stan Czyzyk - NWS Las Vegas  
Andrew Taylor - NWS Flagstaff

Safety

Mark Larsen – NBAA  
Tarek Loutfy - GE Aviation  
Jason Ragogna - Delta Air Lines  
Steven Schmidt - NASA (Ret)  
Tony Williams - STA Jets

Unmanned

Travis Cieloha - Insitu  
Justin Croyle - Amazon Robotics  
Liam Ehlermann - San Diego Gas & Electric  
Jake Lahmann – Valmont  
Brian Prange - TacAero

Work Force Development

John Frasca - Frasca Intl., Inc.  
Paul Scurio - Netflix Aviation  
Arlando Teller - USDOT - OST  
Joe Wolfson - Health Transaction Network

Members at Large

Chuck Crinnian - Frontier Aerospace Medicine

ERAU Representatives

Dr. Anette Karlsson, Chancellor  
Dr. Kathy Lustyk, Vice Chancellor

College of Aviation Representatives

Dr. Tim Holt – Dean  
Ed Coleman - Dept. Chair, Safety  
Dawn Groh - Dept. Chair, AS  
Nick Hansen - Professor, AS  
Merrie Heath - Academic Advisor  
Michelle Hight – Fixed Wing, AS  
Darren Hudak - Career Services Advisor  
Dawn Marcuse – Asst. to Dean Holt  
Stacey McIntire - Academic Advisor  
Parker Northrup - Dept. Chair, Flight  
Jennah Perry - Dept. Chair, AAA  
Clarke Pleasants – Rotor Wing, AS  
Dave Rauch – IT/Media Support  
Greg Reverdiau - UAS, AAS  
Scott Ritchie - Aeronautics, AS  
Brian Roggow - Safety Science  
Hannah Rooney - Safety Director, Flight  
Pete Schlichting - Dispatch, AS  
Steven Schmidt - IAB Chairman  
Mark Sinclair - Meteorology, AAS  
Kyle Wilkerson – Air Traffic, AAS

***College of Aviation, Industry Advisory Board***  
**Tuesday, March 16<sup>th</sup> 2021 9:00am-12:30pm (AZ/MST)**

<b>Time</b>	<b>Topic</b>	<b>Facilitated By</b>
<b>9:00-10:15</b>	<b>Welcome</b>  <b>Program Updates</b> <b>AS – Aeronautical Science</b> Fixed Wing Helicopter Aeronautics Dispatch <b>AAS – Applied Aviation Sciences</b> ATM Meteorology UAS <b>Flight Department</b> <b>MSS - Aviation Safety</b> <b>Academic Advising</b> AS Fixed Wing/Flight  AS Heli & AAS & MSSS	Dr. Tim Holt Dr. Anette Karlsson, Chancellor Dr. Kathy Lustyk, Vice Chancellor Steve Schmidt, IAB Chairman  Prof. Dawn Groh, Dept. Chair Prof. Michelle Hight, Program Chair Fixed Wing Prof. Clarke Pleasants, Program Chair Helicopter Prof. Scott Ritchie, Program Chair Aeronautics Prof. Pete Schlichting, Program Chair Dispatch Prof. Jennah Perry, Dept. Chair AAS Prof. Kyle Wilkerson, Program Chair Air Traffic Mgmt Dr. Mark Sinclair, Program Chair Meteorology Prof. Greg Reverdiau, Program Chair Unmanned Prof. Parker Northrup, Dept. Chair Flight Prof. Ed Coleman, Dept. Chair Safety Sciences  Ms. Jamila Aidara Ms. Stacey McIntire Ms. Merrie Heath
<b>10:15-10:25</b>	<b>Break</b>	
<b>10:25-10:35</b>	<b>Strategic Issues/Future Direction</b>	Introduction by Steve Schmidt
<b>10:35-11:05</b>	<b>Strategic Discussion Breakouts</b>	Program Chairs & Members
<b>11:05-11:15</b>	<b>Break</b>	
<b>11:15-12:15</b>	<b>IAB Caucus w/Chairman</b>	Mr. Steve Schmidt
<b>12:15-12:30</b>	<b>Closing</b>	Dr. Tim Holt

## Industry Advisory Board Narrative, Spring 2021 Meeting

### Aeronautical Sciences – Fixed Wing – Michelle Hight

**In attendance:** Dawn Groh, Paul Scurio, Sam Morris, Bob Braceland, Lisa Solitario

Questions:

- What does the industry need from us?
- What skills do our grads need?

Paul Scurio- corporate pilot, used to be navy, as flew for delta but now corporate for large companies, Netflix, Gulfstream

Analog skills - Paul hasn't seen e6b's in a long time in training or cockpit, navy training they used them, he thinks there is a benefit to knowing how to use them but in terms of practical skill, if a pilot is being interviewed they are not going to be asked about whether they could use an e6b, even in emergency situations there are so many backups today.

Hight- foundational benefits with e6b. Transition to electronic now?

Paul- does help conceptually to know how to use analog e6b

Scott- FAA is still using e6b's, FAA way behind industry. But there still needs to be exposure to analog for testing

Sam Morris: Good way to know what the automation is doing by learning analog. Big catch up during training-how the automation is doing what it is doing when he moved to bigger jets, helps with being ahead of the plane

Paul: asking Sam about how hard it is for a student today, how much background do they get and how important it is during that transition, do kids want to know what is going on behind the magic or no?

Sam: Did private in Hawaii and then every other rating at riddle, when he trained for 7x, g1000 training was good to help learn the glass cockpit for the jet (7x) but he found that when he was working at riddle, there was a difference from people who had trained outside riddle and people who got everything on the g1000 but the partner he had in the training, there was a difference in how to handle scenarios, he believes that initial training with how the airplane is actually flying helps when u move to a jet and things are happening ten times faster than what you are used to

Paul: basics are still helpful and relevant to know

Hight: Charting skills? Would it be up to date to stop teaching paper charts?

Sam: hasn't used paper charts for a long time, they don't even carry paper charts- nothing to fall back on because they don't carry them, suggests using iPad charts now

Paul: He uses Jeppesen charts but still uses ForeFlight for personal flying

Sam: suggests using Jeppesen charts to practice for further careers

Hight: How can we include Jeppesen charts more?

Bob Braceland: Subscription to teach students Jeppesen charts

## Industry Advisory Board Narrative, Spring 2021 Meeting

Hight: issue of soft skills, this generation and the elders who are trying to teach them, there is a mismatch in expectations, what are things do you wish that our grads had when coming out of riddle? What do they need that they don't have?

Lisa Solitario: United airlines, runs internship program: soft skills are interesting with the interns, they place them in regular positions, she has found that communication lacks quite a bit and time management is not good, they roll in late a lot when employees have been at work for hours already, they don't have to go to class until 9 or 10 so they thought that they could go to work at that time. Cell phones during meetings, not okay, they had to tell people to put their phones down. How students communicate with their supervisor: not in a professional manner. They answer, "I guess so". Email etiquette is not good when the email is going out to 20-50 people. Not spelling out words when using email, they should be spelling out things. Recently it has gotten worse. In a professional business setting then they need to be professional over email.

Hight: Counts attendance for points, when they are late then they lose points and those who are late take a hit on their grade. She suggests being more direct with interns about work hours, she thinks this generation responds well to directness about when and where they need to be.

Lisa: students try to justify their actions because their bosses come and go because they are flying. Interns do not see that these pilots can really help them in the long run. She tries to convince them to speak to different people within the company so that they can get more perspectives. She sees a lot of entitlement, a lot of "what's in it for me" attitudes from interns. People chew gum in interviews and she has to stop interviews because of it, oh no.

Bob: email, he sees people not even respond to emails for 3 or 4 days, yikes. Differentiates when interns or students actually respond to email, it sets them apart.

## Industry Advisory Board Narrative, Spring 2021 Meeting

### Aeronautical Science - Fixed Wing – Parker Northrup

**In attendance:** Tim Holt, Steve Schmidt, Joe Wolfson, Bob O’Neil, Chuck Crinnian, Darren Hudak, Jacob Clymo, Kevin Wilson, Merrie Heath, Roy Evans, Sergio Sovero, Stephen Rocha, Dawn Groh

#### Notes:

- PN: how do we get industry more involved?
- PN: What opportunities are we missing?
  - S. Rocha: Wants to get more involved with Academic leadership
  - J. Clymo: We need the invitation to campus and the flight line
  - PN: Do you see it as valuable?
  - S. Rocha: We see a return on investment
  - J. Clymo: WSI weather brief, great weather tool
  - B. O’Neil: If we come to the flight line will student have time for us?
- PN: Educational elements that I need to work on or add
  - S. Rocha: I would like to learn more about ERAU’s virtual reality training. Sounds like it could be revolutionary (from chat)
  - R. Evans: Time is valuable, use CFI time to improve yourself professionally.
  - C. Crinnian: What you do with Academics will get you somewhere, not the degree itself. Every job ends up in leadership. Leadership skills are key.
  - J. Clymo: Prebrief and Debrief are crucial.
    - Threat Air Management
    - Fatigue Risk Management – Critical in industry and should be considered in the educational environment
      - S. Rocha also emphasized fatigue and health management

## Industry Advisory Board Narrative, Spring 2021 Meeting

### Aeronautical Science – Rotor Program – Clarke Pleasants

In attendance: Dawn Groh,

- Overall:
  - Seeking opportunities for students in:
    - Internships both rotor specific and other aviation opportunities.
  - Trying to increase rotor enrollments.
  - Searching for new rotor training provider.
  - Pilots are lacking soft skills
- Rotor Break out:
  - Rob Willis:
    - Previous year attendee.
      - AH64; Navy Test pilot; Lives in Phoenix
      - Company (I3) not L3
        - Huntsville, AL and Victorville, CA
      - Both locations have opportunities for internships, not specifically rotor oriented. Victorville location is UAS centered and operates 5 MQ9 reapers being outfitted for supersonic flight/escort for missiles.
    - Offered to guest speak, which would be great for:
      - Rotor, Fixed and UAS depending on briefing.
    - Contacts with Boeing Field (Falcon Field FFZ) for potential tour of AH64 test facility.
      - Great opportunity for rotor students.
    - Recommended new employees show:
      - Enthusiasm, motivation, Passion and drive for what they do, no matter the subject.
        - Gave example of meteorology student who gave a presentation and expressed these qualities, when her subject may not have been considered the most “Interesting” topic.
  - Armando Teller:
    - Represents all 574 Native American tribes in the US at the Department of Transportation.
    - Graduated Riddle in 1997.
    - Located in AZ (Navajo Nation, I believe).
    - Interested in increasing enrollment of tribal members at ERAU.
    - Discussed importance of expressing respect for land when building helipads, airports etc.

## Industry Advisory Board Narrative, Spring 2021 Meeting

### Applied Aviation Sciences – Applied Meteorology – Mark Sinclair

**In attendance:** Jennah Perry, Andy Taylor, Stanley Czyzyk, Ronny Schroeder

1. What is the best way to incorporate National Blend of Models or Unified Forecasting System into curriculum?

Make sure that those that hope to be forecasters understand the shift in thinking away from deterministic GFS/NAM etc. and toward the ensemble approach, including tools that interrogate same. Use to communicate uncertainty and understand statistical basis. These tools will be the future of forecasting. There has been some resistance from more senior meteorologists to modern statistical skills. Which tools – get in touch with Andy/Stan.

2. Is machine learning something we should be teaching our students?

If we have the capability to teach this, it would be helpful and improve marketability of graduates. These skills would be highly sought after. Specific examples include translating web cam images or raw model data into de facto weather observations and making this autonomous using software. Focus on high impact regions.

In later discussion, Andy added “I could see a proposed machine learning course being an elective for those who are interested. In the case of the NWS, it won't necessarily be the case that everyone is focusing on programming machine learning applications as part of their career. However, it would be a very useful skill to have for those who want to pursue that route and help move the agency/the science forward in that way. Perhaps if it was a course with general information on machine learning applications, it would be relevant to everyone in the degree program. If the course actually teaches students HOW to develop machine learning applications, it may not be needed by all students, but would be of value to those with a greater interest.”

3. Should we include hydrometeorology in program? Dr. Ronny Schroeder, GIS faculty, proposed a 400-level course on microwave remote sensing with GIS in the proposed GIS certification program. Thoughts?

Hydrometeorology not a major perceived gap within NWS. Could be taught as a possible elective. Skills like interrogating radar are useful. Potential employees seem less comfortable with local knowledge involved with flash flood forecasting. Highly dependent on locality – e.g., ice jams in the far north, soil moisture issues. Coordinate with other adjacent agencies. Look at hydrographs, discuss with hydrologists. Most NWS WFOs have a hydro focal point. These are typically meteorologists with specialized background in hydrology. They may have a degree in hydrology.

## Industry Advisory Board Narrative, Spring 2021 Meeting

### **Applied Aviation Sciences – Unmanned Systems – Greg Reverdiau**

**In attendance:** Kyle Wilkerson, Liam Ehlermann, Brian Prange, Travis Cieloha, Jake Lahmann, Justin Croyle, Jennah Perry

Hood Tech considers the ability to operate sensors extremely valuable. Collecting data is one thing, being able to fly is another.

Belmont is doing training with the Ascend Program. They are looking forward to continuing work with Embry-Riddle and have graduates join their team.

Amazon sees a national shortage in the talent in robotics and autonomy development.

#### **Question:**

#### ***What are the skills you see that students are lacking?***

Justin- ERAU graduates don't apply to the jobs they have open. Amazon would love to connect engineering skillsets with aviation, including connecting process controls.

Amazon robotics wants to strengthen the Co-op programs they have, and capitalize on the national shortage of engineers we have.

Jake – pilots they are hiring should understand and know how to utilize LIDAR, munition plans, etc. Engineers analyze the data, but the pilots need to be able to acquire the correct data. Pilots must understand the imaging aspects of the business. Getting the picture is the “Brass Tax.” The picture has to be perfect. UAS pilots lack good leadership: CRM, lead a team, mission planning, crew preparation, etc.

Travis – Aspects that need to be reinforced are operational risk management and aviation professionalism. Operators need to understand an aviation mindset, such as how to document maintenance, how to handle a system, etc. Decisions have to constantly be made, but be able to manage and calculate risk. Give students the elements of the concepts of project management and running a team with excellent documentation, human factors and risk management, to try to understand how they intermingle with each other.

Brian – Part of his background is with FAA test ranges. What is beyond a Part 107? His problem is how to train future pilots who will be able to manage hybrid and semi-manned aircraft.

Greg – Our pilots will eventually be system managers, running the whole show. It's not about being able to fly a drone manually, it's much more than that.

Brian – ERAU is in a unique position to partner with industry and the FAA.



## Industry Advisory Board Narrative, Spring 2021 Meeting

### Aviation Safety Science – Ed Coleman

**In attendance:** Brian Roggow, Troy Williams, Mark Larsen, Seth Buttner, Hannah Rooney, Tarek Loutfy

#### Individual Discussions with members not present at IAB:

David Robertson, Jason Ragogna, BJ Goodheart

Department Chair briefed on latest changes to program based on previous IAB input. Some of the changes are:

1. SMS is emphasized in multiple courses but SF 345 and MSF 613 have the greatest emphasis.
2. Students are earning industry certificates in multiple courses, OSHA 30 and ICS specifically.
3. Emphasis has been placed on writing in both undergrad and graduate courses.
4. Students are required to do more presentations in graduate courses to prepare for public speaking.

Question was asked if this meets the intent/needs of industry or are more changes needed. Some of the comments were:

1. We seem to be going in the right direction. Lesson objectives and teachings to remain broad based, most not going to be writing an SMS for a 121 company directly out of school.
2. Understanding the basics and how it all fits together is important, this doesn't change based on operation.
3. Students need to understand that a lot of their focus will be on manuals and revisions so technical writing is very important.
4. More training on root cause analysis.
5. Training on how to conduct audits and internal evaluations.
6. Emergency response/management is an area we should also stress.
7. A certificate for SMS would be helpful.

Because the time was limited all the questions that the Department Chair wanted to address weren't so I made several phone calls to individuals to discuss other topics. Some of the feedback and the questions follow:

1. Should we add a bachelor degree program in addition to the minor? Consensus was that this would be a good option for several reasons:
  - a. It would prepare students for a position in safety immediately.
  - b. It was stressed that the program should cover both aviation and OSHA as a lot of companies don't have the luxury of having people for both.
  - c. One commented that it could pick up people leaving other degree programs.
2. Is there anything you would like to see added to our programs? Most agreed the programs were mostly meeting their expectations with the recent changes and continued emphasis on technical writing and speaking were great. One comment that should be considered in the future was adding an intro to business course. Often times safety managers can't make a business case for safety and it is often a detriment to accomplishing things. We stress risk management in safety but that goes for finance as well. Graduates should understand how to explain Return on Investment and not just rely on "we want everyone to go home at the end of the day". If that is our goal, we've failed.
3. Are there any things we could be doing to help industry with either research or interns? Several had ideas for research and I am running down a few now with students. One area that was stressed was that the research didn't need to be "new" but could take industry statistics and explain them so they were easier to apply to programs. There were several who thought interns were a plus and are looking at options to get them approved for their company.
4. The final question was on professional education programs. The industry sees a need and the hands on/in person classes are seen as beneficial. In the future a mix of online and in person classes could help our program grow. The labs are our biggest strength/draw, we need to stress that and utilize them for more than what we are now. The UAS industry is growing like crazy and is probably in need of some of our expertise.

Overall there were several good discussions and the changes we are making seem to be what industry is looking for. Adding a few new topics can help round out the students experience and expose them to more relevant needs. The virtual breakout was too short to cover all the topics and allow participation with the number of people I had in the session.