

Unmanned Systems Education Summit  
Notes from Breakout Sessions – 3/15/2016

This document captures the flip chart notes taken at three breakout sessions on March 15. For a synthesis of key points please see the file EdSummitKeyPoints.docx

**Question 1: To what extent are the educational institutions aware of the total picture of UMS industry needs and opportunities in Virginia? What could be done to improve?**

- No consensus on needs
- Industry is developing ~ 100 jobs??
- Poor industry – academic connection
- Improvement: Education Summits > Industry and academia
- Attempt to align curriculum w/industry needs evident
- Variation among curriculum: piloting, manufacturing, 3D printing, GIS analysis. Provide support of regional interests (niche)
- FAA problems are not apparent
- Not a lot of research on state/federal regulations
- Public policy people – need level of understanding of what engineers do – what is a drone? Many, including students, would answer that question differently/incorrectly
- We need a statewide marketing approach – (i.e., here’s what’s going on in Education world right now in terms of UAV)
  - How do we pull information from different sources/stakeholders?
- Also need flow of information from industry to universities/community colleges
- “Industry” is diverse and growing rapidly – not a singular entity
- Industry can reach out to Universities/Community Colleges to help develop curricula – indicating that: “we need these specific skills”, so education folks can be responsive and students can get jobs
- Community College jobs have to be regional from a wide variety of perspectives; their students don’t want to relocate (but later on there was a large discussion that this old/current model perhaps should be modernized around centers of excellence concept)
- UAV industries – must include all primary companies and suppliers, but also application areas: mining, orchards, vineyards, etc. must also contribute to curricula development
- Conflict between (Education & Industry) vs. what FAA permits (“wait till 107 hits, things will really take off”)
- UAVs coming – each industry must consciously decide to opt in/out
- Small businesses need multi-hat engineers
- One theme on which both sides were argued: should schools (e.g., Community Colleges and/or Universities) focus more on particular skillsets needed “today” or more general skills and/or constructs? Both sides were argued to be the solution and/or problem by different attendees.

**Question 2: To what extent are industry needs being met in terms of workforce and in beneficial relationships with the education system (for example for interns, technology spin off, incubators, matching graduates to jobs, other)? What could be done to improve?**

- Early in industry – small numbers
- Don't know how to tap into universities
- Textron: No
- Multidisciplinary
- More comprehensive model:
  - K-12
  - Internship
  - Textron/Liberty model
  - UAs in the home? Diversity challenge
- Funding – non-traditional sources Public – private
- Don't just look at Virginia needs
- MAAP, Liberty, others an asset
- Integrated cyber/big data/unmanned systems
- Public statements by Governor/SoTech
- Recognize we have competition – move fast
- Virginia Consortium for Federal Funding
- Systematic Effort
  - Understand industry needs
  - Statewide effort to meet needs
- Stay flexible in curriculum. Don't need a 4-year degree
- Employer needs: knowledge of maintenance (fixing sensors, etc.); data analysis (photogrammetry);
- Need operators (repair, build, fly)
- There are core skill sets that programs need (DACUM review will add to this)
- Connect with industry to help teach courses
  - Attached UMS programs to existing programs
  - If industry contacts CC programs, they will attempt to create workforce programs
- Programs are placing students
- Need people with core data processing knowledge to send to operation classes, multidisciplinary
- Dearth of entry level jobs – what does industry want as entry level? Hard to place students in currently available jobs
- Pilot requirement for drone operators may be obsolete, and things may change once/if this rule changes
- Small businesses need people who are well educated and rounded and good people – then, they can be trained in terms of specific needs
- At VTTI we've seen demand for students w/ more hands-on applied experience, so we're establishing an internship program
- Education needs to be ahead of the curve, giving FAA something to target, cause they move slowly (i.e., don't/can't wait for FAA decisions to make curricular or business decisions)

- Takes a year to develop a class, more for an entire curriculum
- Chicken egg problem – what comes or moves first: industry, education, or governmental regulations...?

**Question 3: What gaps/overlaps exist in our Educational system?**

- GAPS: do we know the needs of industry? Need to make a considerable effort to meet need because industry/tech is changing so quickly
- Pilots' licensing is a hurdle (time and \$\$\$); high certification standards; transitioning military
  - Many students are full-time workers & cannot take time to get license
- Applying UAS technology – training students for application purposes (industry applications)
- Create curricula based on rules of thumb at this point - general ideas, not based on specific regulations (cause they don't exist yet)
- Foundational concepts are key in Education – if too targeted, won't be good for most jobs
- Liberty University offered to help Community Colleges establish/develop their curricula
- From notes taken during the presentations: Are curricula being created by individual schools or in collaboration (for example for first responders)? On our own; if there was a standard we would use. A&P certification standards for UAS are not defined (Airframe and Power plant mechanic). Do we need an A&P for UAS? Speakers and others commented on need for standardized curricula, standards, curricula for operators.

**Question 4: Feedback to the preparation of the evening before “A concept for a Multi-University/College Automated Systems Program in Virginia”. In what other ways can we collectively work more closely together to integrate our efforts for education, awareness and marketing of our capability, and support of the nascent UMS industry?**

- We have a small set of potential students. We cannot send them across the state for training.
- There is room for specialization while maintaining education standards established by FAA
- Good idea to leverage resources in multi-institutions. Would need to start at Governor and Presidents' level for universities
- Less of a need across community colleges once standardization is put in place
- Need transitional from community colleges to university; facilitate easy transfers
- Universities won't accept Community College courses taught by those without at least MS or PhD – hogwash! This hogties Community Colleges, as some of their best/brightest teachers don't have such credentials
- Could possibly share courses in the reverse direction
- Some Community College courses may not count towards 4-year degrees, but a 2-year degree can be used to get a student accepted to a 4-year program
- 4-year programs could focus on regulatory aspects of UAV as an area in and of itself
- Community Colleges are currently focused on (or limited to) their own narrowly defined physical regions – defined in '64; things have changed; need to look at areas of expertise; Northern Virginia as different needs from Southwest Virginia – should each Community College be all

things to all people or define an area of expertise and work w/ 4-year institutions and industry in that capacity?

- Provost: VT and others trying to be more globally focused for altruistic reasons and due to real-world exigencies
- Liberty – Certificate Program – these can be defined more freely and meet different needs more quickly and flexibly than degree programs

**Question 5: If you could provide one recommendation to the UMS Commission regarding actions to increase the educational system contributions to the UMS industry, what would that be?**

Recommendation: Develop a multi-institutional approach where institutions collectively identify industry needs and establish standards for curriculum while allowing for niche strengths among education institutions.

- Make the regulatory environment in Virginia more attractive
- Define industry needs; state get arms around multi-institutional approach to address different needs; certificates, AS, BS, PhD.....
- Collectively create UMS criteria for curriculum and skills standards – continuity with niche strengths
- Virtual Research Triangle equivalent to UMS
- How we are unique: UMS test sites, ED institutions
- State and universities need to fund and market
- Develop a network of feeder institutions; community colleges to university - like Research Triangle
- Coordinate 333 waiver request across all academic programs
- Include social sciences (e.g., public policy) – survey, data analysis, etc.
- Privacy laws can shut things down in the UAV realm
- Develop a board between Community Colleges – 4-yr institutions – industry (provide feedback between material taught and hiring needs)
- As curricula develop, we should reverse map to military training so veterans can come into the field and be hired based on their actual skills/expertise
- Need a state-wide coalition of universities and Community Colleges – unanimous agreement

**Post script (from an email received after the event):**

With respect to the VT multi-university proposal; consider using the existing network of 4-VA to help get things started with this project. See <http://4-va.org/>