10-2021

AeSSA Young Professionals Forum Webinar "Technologies and Skills that will GearUp the Aerospace Industry Post Pandemic" - A Global Perspective with an emphasis on South Africa October 2021

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AeSSA Young Professionals Forum Webinar- "Technologies and Skills that will GearUp the Aerospace Industry Post Pandemic"

- A Global Perspective with an emphasis on South Africa

October 2021

Embry-Riddle Aeronautical University

Dr. Linda Vee Weiland

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EMBRY-RIDDLE Aeronautical University WORLDWIDE

- Thank you for the opportunity to share my perspective on
- “Technologies and Skills that will GearUp the Aerospace Industry Post Pandemic”
- - A Global Perspective with an emphasis on South Africa October 2021

Agenda- what will we talk about today as we think about “Gearing UP in the Aerospace Industry Post Pandemic”

- A short tidbit or two on my path of technology
- Some Post Pandemic ideas or changes
- Technology
- Resilience and Sustainability
- Unmanned Aerial Systems
- Artificial Intelligence
- Automated or Simulated Learning
- Mentorship and Leadership
- Q and A
- Get ready to “Gear Up” in group discussions

Background on Dr. Linda Vee Weiland

Love of aviation since about an hour before birth. Here is one of my current adventures.

Taken from my first jump out of a perfectly safe airplane in 2019 on the North Shore of Hawaii

"We should always Gear Up our skills to include Technology in the Aerospace Industry"

Education and Research –
South Africa Sep and Oct 2020

- September and October 2019 in the Joburg area and attending University Witwatersrand. Attended other events and enjoyed the knowledge I gained
- Part time Ph.D. student at the University of Witwatersrand in the School of Mechanical, Industrial and Aeronautical Engineering, Johannesburg, South Africa (SA). Her topic of interest is *Resilience of communication in ATM, with a focus on aeronautical and industrial engineering methodologies and theoretical framework.*




How to continue research
in technology in ATM
while in Lockdown
October 2020

- SAIIE Green “Being the Change” 5-7 October 2020. Virtual Conference.
  - Virtual PowerPoint presentation and an article for the Journal
  - **ENSURING SUSTAINABLE AND RESILIENT AIR TRAFFIC MANAGEMENT SYSTEMS FOR SOUTH AFRICA WITH COMPLEXITY AND WHOLE-OF-SOCIETY THEORY APPROACHES**

    L.V. Weiland1,2*, C. Law1 & B.P. Sunjka1

ENSURING SUSTAINABLE RESILIENT AIR TRAFFIC MANAGEMENT SYSTEMS FOR SOUTH AFRICA WITH COMPLEXITY AND WHOLE-OF-SOCIETY THEORY APPROACHES

L. V. Weiland - ERAU Daytona Bch FL USA
B. P. Sunjka - University of Witwatersrand SA
C. Law – University of Witwatersrand SA

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG
SCHOOL OF MECHANICAL, INDUSTRIAL & AERONAUTICAL ENGINEERING
SAIIE GREEN BEING THE CHANGE VIRTUAL
5 – 7 October 2020

THE AREA OF RESPONSIBILITY FOR ATNS IN SA

Figure 2. ATNS Presence in South Africa

(ATNS 2019,Soc limited integrated report 2019)

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ABSTRACT

Air traffic management is a complex multi-disciplinary socio-technical system of systems that directly supports the air transportation industry. With the introduction of new technologies into the air traffic management system, there is a lack of understanding of the effects of new technology on people, machines, procedures, and regulatory environments. There is thus a demonstrable need for methods to determine credible requirements that can be used to outline operating procedures, policies, tools, and techniques for continued resilience. The purpose of this paper is to develop a conceptual framework using the 'whole-of-society' perspective and tools such as complexity theory, applying these to air traffic management in South Africa. The framework is developed further to understand the requirements for ensuring a resilient and sustained air traffic management network

OPSOMMING

USA work enrolled in Two PhD's

- Ph.D. from Capitol Technical University in Human Factors. Her Dissertation was on *Implications between UAV and ATM systems in commercial airspace incorporation.*
- I hope to publish parts of this research over the next few years

ABSTRACT

The integration of sUAS in commercial airspace is complicated and faces many challenges to ensure a safe and secure incorporation into the National Airspace System (NAS). This research analyzes the interconnectedness between the air traffic controller and the sUAS through HF implications when sUAS enter the NAS. To mitigate negative consequences in the integration, it examined the human performance of the controllers, the sUAS operators, commercial pilots, and the equipment. This study used a quantitative research approach from both the Software Hardware Environment, Liveware, and Liveware (SHELL), and the Swiss Cheese models (SCM) for analysis of UAS sightings that are part of the Federal Aviation Administration (FAA) UAS sightings reports and National Aeronautics and Space Administration (NASA) Aviation Safety reporting System (ASRS). This identified the HF that could cause human errors during sUAS integration in the NAS. The study found that there is a gap in the knowledge for understanding human error from the controller perspective in the integration of sUAS in the NAS; however, work is being done to mitigate these errors and ensure safe integration for all stakeholders. The study highlighted possible human errors that air traffic controllers could make if further research, education, and training were not conducted to mitigate errors. The study revealed that further collaboration is needed to mitigate Air Traffic Control (ATC) centered human errors. It also recommended that the Safety Management System (SMS) program continue development in sUAS. Finally, it is recommended that research continue by the FAA and NASA with the ASRS and UAS sightings reporting to include the radio frequency identification (RFID) requirements.

Keywords: unmanned aerial systems (UAS), unmanned aerial vehicles (UAV), National Airspace System (NAS), air traffic controllers, human factors, human errors, safety management systems (SMS), cybersecurity

Visualize the agenda in my story

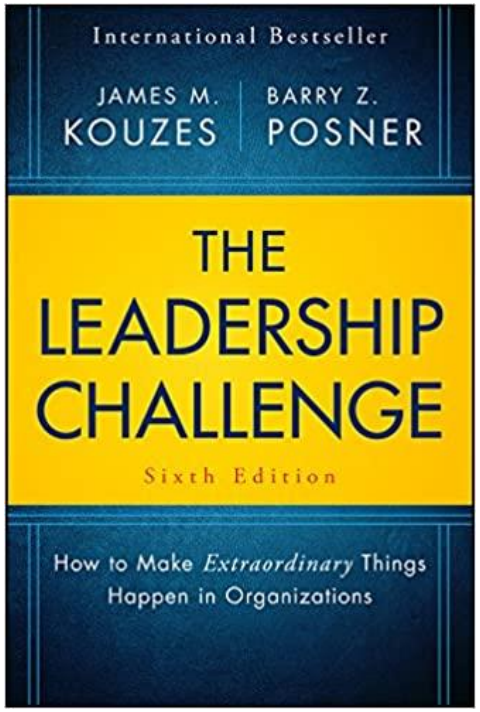
- You should have observed tidbits from the below is my “Story telling” approach
  - A short tidbit or two on my path of technology
  - Some Post Pandemic ideas or changes
  - Technology
  - Resilience and Sustainability
  - Unmanned Aerial Systems
  - Artificial Intelligence
  - Automated or Simulated Learning

  Think about the story line and your path

  Now let’s bring in Leadership and Mentoring

How do I “Gear Up”

Leadership and Mentoring



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Leadership is everyone's Business

- "The Leadership Challenge book was first published in 1987 and has become the Gold standard on becoming an exemplary leader. Well-grounded in research and written by James Kouzes and Barry Posner" (insert cover of book). I use the book as a faculty at ERAU in MAVM 601 leadership in Global Aviation maintenance Organizations.
- Chapter 13 Leadership is Everyone's Business Page 295
  - Exemplary leadership is local. p. 296, 299, 300
  - Here are some questions and Ideas for the breakout group session too.
    - Who was your role model for leadership?
    - What do you notice about those people?
  - I believe leading is mentoring and following is reverse mentoring
  - I believe this is a Way to "Gear Up" at a Global Level
  - Remember We Set our own example for people

Quotes/Excerpts from this Chapter

- The people I manage deserve the best leadership in the world.
- That leader got me to do more than I thought I was capable of.
- Exemplary Leadership matters.
- Learning leadership takes practice.
- Contrasts and Contradictions
- First lead yourself
- Leading is doing
- Remember the secret to Success in life. Leadership from the Heart

Leadership from the Heart- shows “Gearing up with Technology in Post Pandemic Aerospace Industry

- Page 309-310
- Leadership from the heart: a place of being genuine, being vulnerable, and bringing your whole self to work. Think about these questions:
- 1. What were the peak moments in my live and what motivated me to achieve them?
- 2. What are the values that should guide my decisions and actions?
- 3. What do I need to do to improve my abilities to move forward?
- 4. Where do I think we should be in 10 years?
- 5. What give me the courage to continue in the face of uncertainty and adversity?
- 6. How solid are my relationships? How trustworthy am I?
- 7. What can I do to keep hope alive-in others and in myself?

Conclusion

- I have shared my journey and how I use Technology. There is so much technology available and it is rapidly changing
- However, one cannot take the “Human out of the Loop”. I hope I shared items that will assist you in the group discussion and will assist me in my teaching and research and bring me back to South Africa to the 2022 conference and work at Witwatersrand on my Original PhD.
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- Questions and Answers
- Let's get ready for break out discussions
- Remember technology is all around us – be adventurous and be excited to “Gear Up for the “Post Pandemic aerospace industry”