

From The Ground Station Up: Space IT Education via Operation and Management of an S-Band, UHF/VHF CubeSat Ground Station

- Daniel J. Freburg, School of IT - Illinois State University
- Dr. Will Lewis, School of IT - Illinois State University
- Charles Edamala, CIO, Illinois State University
- Dr. Michael Lembeck, Aerospace Engineering - University of IL Champaign



Agenda

- Starting a CubeSat Program with a Ground Station
- Space IT Education
- Ground Station Location & Specs
- University Collaboration
- Contact Us / Questions / Comments



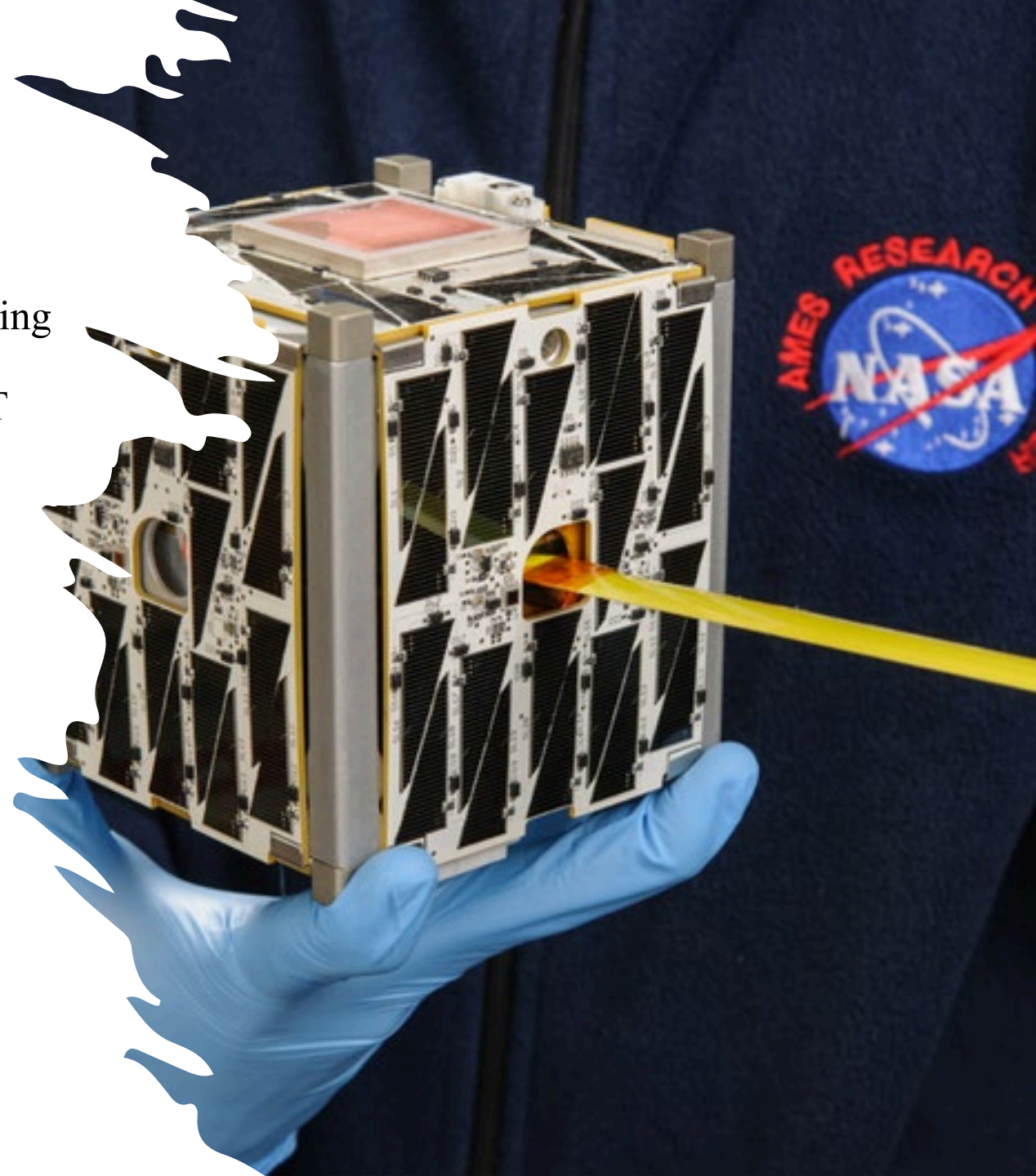
Developing a CubeSat Program by Starting with a Ground Station

- Starting with a ground station
 - ISU has no aerospace engineering discipline
 - ISU College of Engineering starts Fall 2025
 - Some ISU School of IT faculty are focusing on the Space IT aspects
 - Installing an S Band/UHF/VHF ground station to support universities with CubeSat missions
 - Gaining experience before developing a CubeSat Program

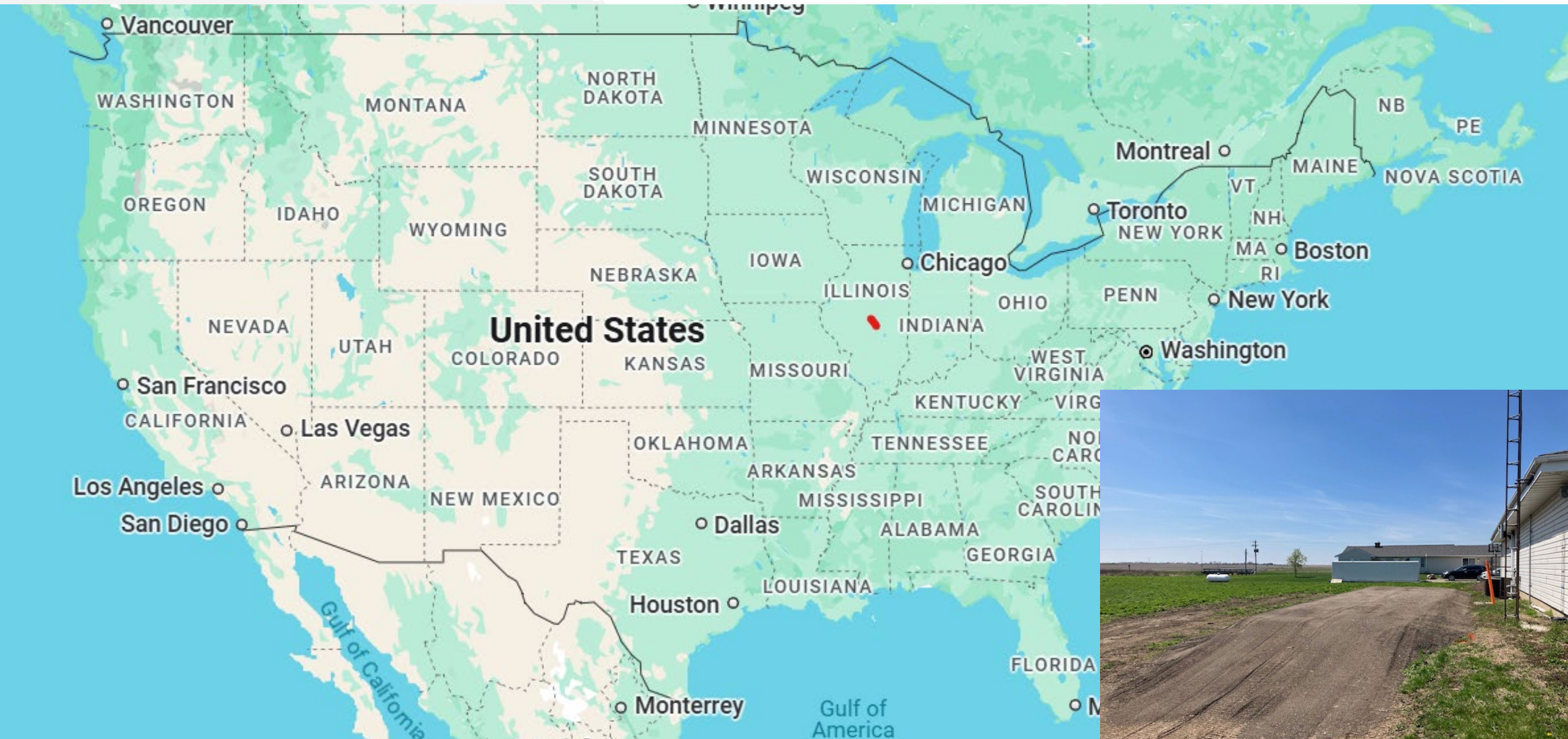


Space IT Education

- Space IT Education
 - Teaching students about Space IT concepts by operating and managing the CubeSat ground station
 - Extending traditional IT concepts to include Space IT
 - **Networking**
 - Space communications
 - Ground station networking
 - Space communications protocols
 - **Cybersecurity**
 - Securing space systems
 - Low-power encryption methods
 - **Computer Science**
 - Satellite tracking software
 - Software defined radios
 - **Information Systems**
 - Managing downlinked data
 - Analyzing telemetry data



Illinois State University



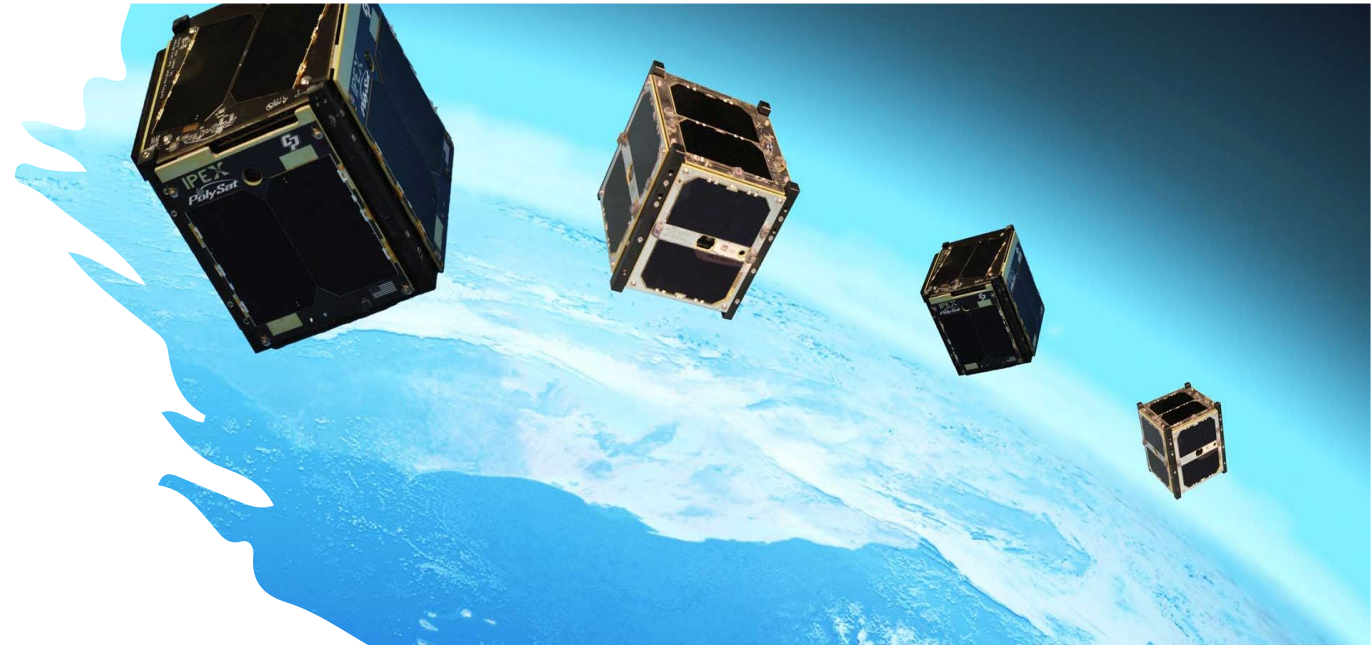
Ground Station Specs

- UHF
 - Crossed Yagi
 - 395 MHz – 405 MHz RHC
- VHF
 - Crossed Yagi
 - 144 MHz – 146 MHz, LHC RHC
- S-band
 - 3-meter dish
 - 2.19 GHz - 2.29 GHz RHC



University Collaboration

- Illinois State University is seeking collaborations
 - Support CubeSat missions
 - Develop inter-university faculty/staff/student collaboration
 - Commercial, Research, Educational, Community outreach
- ISU ground station as-a-service
 - Pricing below commercial ground station as-a-service rates
 - Rates depend on level of collaboration
- ISU ground station uses
 - Primary
 - Networked ground station to extend downlink time
 - Back-up ground station to improve resiliency



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