



Engineering a Better World

UMS Education Summit

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GMU Cyber/UMS Educational Programs

- BS in Information Technology: Information Security Concentration (BS INFT:INFS)
- BS in Cyber Security Engineering (BS CYSE)
- MS in Applied Information Technology: Cyber Security Concentration (MS AIT:CYBR)
- MS in Computer Forensics (MS CFRS)
- MS in Information Security & Assurance (MS ISA)
- Executive MS in Management of Secure Information Systems (Joint program with School of Business and School of Public Policy (MS MSIS))
- PhD in Information Technology: Information Security & Assurance Concentration (PhD INFT:ISA)
- PhD in Information Technology: Digital Forensics Concentration (PhD INFT:DFOR)

UMS Coursework at Mason

- CYSE 230 (Computer Networking) - students design a remote drone controller based on socket programming
- CYSE 425 (Secure RF communications) - students designed WiFi based local drone controller for Parrot Bebop Drone and designed a drone subverter that can hijack a drone and steal the control when someone else is operating a drone. Students have explored possible security solutions (WEP, WPA2 etc.) to improve the drone security.
- SYST490/495 – Capstone Class - Design of a Beach Life Guard Life Vest Delivery System (BLGVDS) - system design

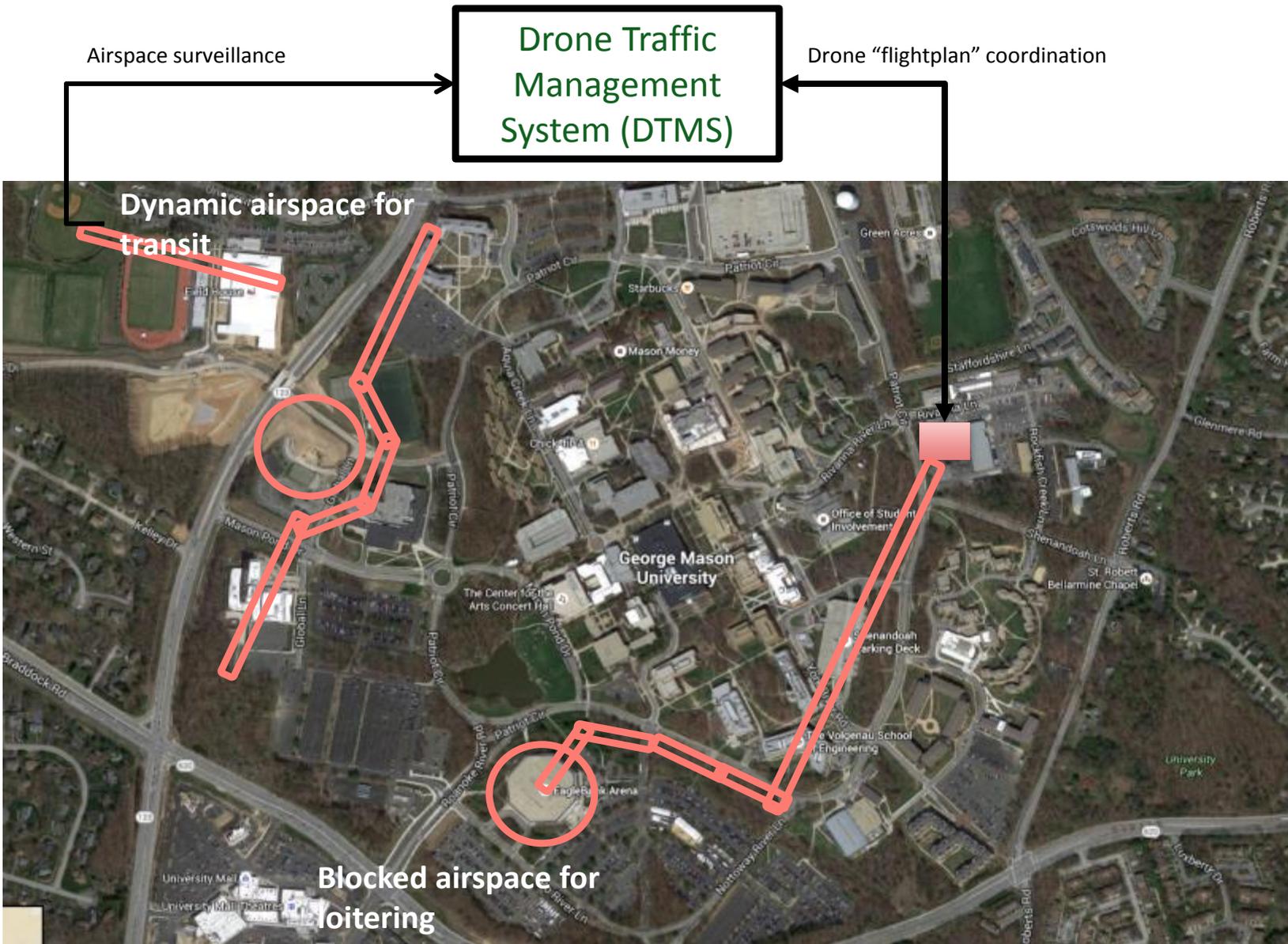


UMS Research at Mason

- Drone/sUAS Safe and Secure Drone Flight System (S^2DFS) a system and architecture for providing for safe and secure pop-up no-fly zones (e.g. medi-evac helicopter servicing an accident site, White House, ...)
- Design of Small Package Drone Delivery Systems (SPD2S) used for asset repositioning (in a warehouse) and time-critical, high value delivery (i.e. spare parts, medication, defib, ...) - system design
- Design of a Beach Life Guard Life Vest Delivery System (BLGVDS) - system design
- Design of a Drone Aerial Photography System - hands-free operation of a drone for complex maneuvers
- Drone Collision Risk Analysis
- Design of a Secure Drone Transponder - design and analysis
- Framework for Design of Autonomous Drones
- Analysis of Data Persistence on Embedded Systems
- Intervention in Non-Normal Operations for Semi-Autonomous Drones
- Bridge Inspection using unmanned aerial vehicle to photograph the 280-foot Whistle Stop Bridge—the longest timber bridge in North America—on Alaska's Kenai Peninsula



GMU Campus Drone Traffic Management (DTMS) System Test-bed



Approved Test-based Applications:

1. Maintenance rapid parts delivery
2. Extending WIFI network for events
3. Perch-and-stare surveillance for events
4. First-responder surveillance
5. Accident site investigation
6. Life-vest delivery system
7. (Warehouse) rapid asset relocation
8. Bridge Inspection
9. Aerial Surveying
10. Entertainment and Aerial Photography

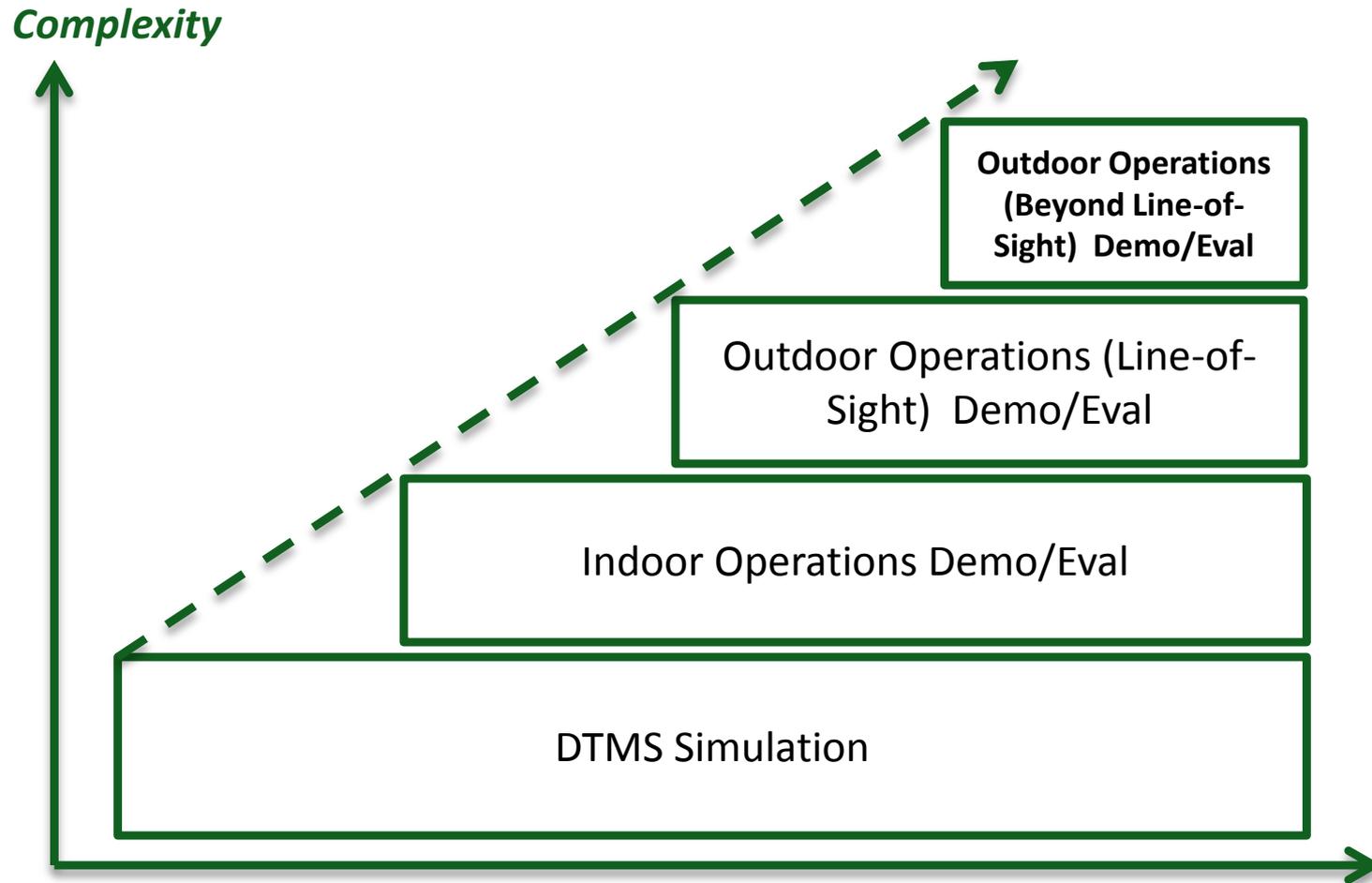
Enabling Technology Research

- Drone Platoon/Swarm Coordination
- Drone Collision Risk Analysis
- Secure Drone Transponder
- Drone Airworthiness
- Autonomy and decision-making
- Legal and Regulatory framework



Don't you know GMU Campus is in the air defense identification zone (ADIZ)?

Sponsors say:
“If you can do it here (in the ADIZ), you can do it anywhere”





For more information:

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<http://volgenau.gmu.edu/cse>