

The 4th Annual Conference on...

# UNMANNED AERIAL VEHICLES

*Platforms, Payloads, and Opportunities*

Experts from OUSD/ATL, USAF UAVBL, Navy PEO-W, TUAV PO, Army UAV TPIO, JTIC, Army AATD, Army PEO-IEWS, CECOM, OPNAV N632, DARPA TTO, USMCSC, General Dynamics, Northrop Grumman Ryan, Motorola, AAI, L-3 Communications, Aurora, APTI, AAS, Mercury, and RTI examine...

- ◆ DOD, Navy/Army/USAF Needs, Initiatives, Master Plans
- ◆ UCAVs and Weaponized Loitering Systems
- ◆ Integrated Manned-Unmanned Operations
- ◆ Platform Statuses and Payloads – Global Hawk, Predator, VTUAV, MRE, Shadow, HOVTOL, and more
- ◆ Payload Capabilities – ISR/SIGINT/Multi-INT, Hyperspectral Sensors, Smart Cameras
- ◆ Control Systems — Data Links, CGS, etc.

Washington, DC

September 10-11, 2001

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# 4th Annual Conference on UAV Platforms, Payloads & Opportunities

Washington, DC • September 10-11, 2001

## I. EMERGING MISSIONS, NEEDS AND INITIATIVES

### “DoD’s Roadmap for UAVs”

MR. DYKE WEATHERINGTON, Staff Specialist for UAV Programs, Strategic and Tactical Systems, Office of the Under Secretary of Defense (Acquisition, Technology, and Logistics)

### “USAF UAV Battlelab Update”

COLONEL JON BALL, Commander, USAF UAV Battlelab, Eglin AFB

UAV Platforms and Payloads • UAV SIGINT Cross Cueing • Predator Comm Relay • Forward Air Control UAV • Automatic Target Recognition • Remote Weather Sensor from UAVs • SAR/Data Compression • Global Hawk Advanced Payloads • Weaponizing UAVs

### “Navy/Marine Corps UAV Program – Program Manager’s Update”

CAPTAIN LYN WHITMER, Program Manager, Navy/Marine Corps UAV Programs, PMA-263, Program Executive Office-Strike Weapons and Unmanned Aviation

Navy UAV Roadmap • VTUAV Firescout • Tactical Control System (TCS) • Medium Range Extended (MRE) UAV

### “Tactical Unmanned Aerial Vehicles - The Way Ahead (Army UAV Program Requirements)”

LT. COLONEL KEVIN S. STOLESON, Deputy TRADOC System Manager for Unmanned Aerial Vehicles [or] MR. TED GIROUARD, Deputy, TRADOC System Manager for Unmanned Aerial Vehicles & Aerial Common Sensor

### “UAV C4I Interoperability Testing Programs”

MR. JASON FRYE, ISR Systems Test Director, Joint Interoperability Test Command

Standards Compliance Testing • Risk Reduction/Risk Mitigation • C4I Interoperability Testing and Certification • UAV Testing Update • Lessons Learned

## II. MANNED-UNMANNED OPERATIONAL INTEGRATION

### “Integrating Manned and Unmanned Systems – Army Aviation Vision and Progress”

COLONEL WALDO F. CARMONA, Commander, Army Aviation Applied Technology Directorate

Apache-Hunter Baseline • Early User Feedback • Role of Cognitive Decision Aiding • Hunter Standoff Killer Team • Wing-Store UAV • Lethal UAVs • Live Experimentation • MOUT Applications • Common Interface for Control of Tactical Unmanned Systems

### “Robotic Air and Ground Vehicles – Integrated Operations”

DR. ROBERT FINKELSTEIN, President, Robotic Technology Inc.

Synergies from Combined Operations of Robotic Air and Ground Vehicles • Sun Tzu and UGV/UAV Integrated Operations • Robotic Air and Ground Platforms in the Future Combat System • Intelligent Control and Intelligent Mobility • Control of the Robotic Collective and Distributed Unmanned Systems • Mission Example: Scout Platoon



### III. UCAVS AND WEAPONIZED SYSTEMS

#### **“DARPA/USAF Unmanned Combat Air Vehicle”**

COLONEL MICHAEL B. LEAHY, JR., Program Manager, DARPA/USAF UCAV ATD, Tactical Technology Office, DARPA

SEAD/Strike Mission Potential • Affordability • Progress to Date on UCAV ATD • X-45A and Other Demos • Secure Robust C2 • Human-Computer Function Allocation • Mission Control Station Design • Supportability • Lessons Learned

#### **“DARPA/USN UCAV Program”**

DR. WILLIAM SCHEUREN, Director, Advanced Rotorcraft Technology, Tactical Technology Office, DARPA

#### **“Loitering EW Killer ACTD”**

MR. MARTY MEYER, Director Advanced Programs, Marine Corps Systems Command

Low Cost, Expendable or Recoverable EW/UCAV ‘Truck’ • Transforms from ‘Slick’ Form into Low-Speed Aircraft • Radar Jamming Capability • EO/IR Sensors on Platform • Pre-Programmed and/or In-Flight Re-Tasking • ACTD Launch Made from Helo • Recovery via Parachute

### IV. PAYLOADS AND PAYLOAD OPPORTUNITIES

#### **“Navy Sensor Requirements for UAVs”**

CAPTAIN ROBERT HUDDLESTON, Director, Navy TENCAP (CNO N632)

National – Tactical SIGINT Integration • Comms Relay and SIGINT Collection • ASW Sensors/Mine Detection • Hyper-Spectral Imagery Sensors

#### **“Intelligence and Information Warfare Directorate (I2WD) Payload Needs and Initiatives”**

MR. JOHN CERVINI, UAV Special Projects Officer, Communications and Electronics Command

#### **“Division TUAV SIGINT (DTSP) Payload”**

MR. CHRIS KELLER, Deputy Project Manager, Signals Warfare, Program Executive Office-Intelligence, Electronic Warfare and Sensors (PEO-IEWS)

DTSP Acquisition Strategy • DTSP Requirements • DTSP Risk Reduction Demonstrations • DTSP Status/Future Plans

#### **“A New Perspective on a UAV Multifunction SIGINT Payload”**

MR. JIM HEMSCHOOT, Director of Information Processing Systems, L-3 Communications Systems-East

An ELINT Payload Used to Cue a SAR • SIGINT UAV Payloads to Supplement Standoff Systems • Potential Uses of COMINT UAV Payloads • Mapping the Battlefield – A UAV COMINT Feasibility Demonstration • A Concept of Operation for a Multifunction SIGINT Payload • An LPI/LPD Data Link for UAV Operations • Dealing With Unknown Signals • Summary

#### **“Tactical UAV Hyperspectral Systems”**

MR. CLARK FREISE, Director of Business Development, Advanced Power Technologies, Inc.

Current Operational Hyperspectral Systems – Manned and Unmanned • UAV Specific Technical Issues: Size Limits, Power Restrictions, Data Links, Real-Time Processing and Product Dissemination, Operator Interface Complexity and Training



## V. INNOVATIVE PLATFORMS

### **“Shadow and Hunter Program Updates”**

MR. MICHAEL PADDEN, Chief, Acquisition Management Division, Tactical UAV Project Office

### **“Global Hawk and Other Ryan UAV Developments”**

MR. NORMAN SAKAMOTO, Vice President, Business Development, Northrop Grumman Ryan Aeronautical Center

### **“A Funny Thing Happened on the Way to the Milestones”**

MR. PETE MULLOWNEY, Director for UAV Program Development, AAI Corporation  
Shadow TUAV System Description • Shadow TUAV System Testing Experience • Lessons Learned

### **“The GoldenEye VTOL UAV”**

DR. JOHN S. LANGFORD, President, Aurora Flight Sciences Corporation

Civil and Military Users Share Interest in a Small, Highly Autonomous System UAV • Aurora Flight Sciences is Developing a VTOL UAV — The GoldenEye • Evolution of the GoldenEye Concept, Its Enabling Technologies, and Its Potential Applications

### **“HOVTOL”**

MR. TERRY JAMES, Chief Executive Officer, Airborne Autonomous Systems

Why HOVTOL? Primary Requirement for Most “Future” UAV Designs? • Key Barriers to HOVTOL / UAV Development • Key Reasons for Inception of the HOVTOL UAV • Commercial/Civil Requirements vs. Military • Civil Applications of HOVTOL • Commercial HOVTOL Applications • Military Applications of the HOVTOL UAV • Cooperative Development • Semi-Autonomous Flight • Summary and Questions

## VI. CONTROLS, LINKS AND INFORMATION PROCESSING

### **“An Evolutionary Path for Small and Tactical UAV Systems as Information Nodes in a Network Centric Operational Environment”**

MR. HUGH PERRY, Chief Engineer, Unmanned Systems, General Dynamics Information Systems

Some Benefits and Limitations of “Stove Piped,” “Eye in the Sky” UAV Systems • Evolution of UAV Systems from “Stove Piped” through “Autonomous” to “Collaborative, Network-Centric” Operational Environments • Ideas to Make Best Use of our Key Asset – Bandwidth – in a Network-Centric Environment • The Functionality of our Ground Control Systems of Today May be Radically Different in a Networked Environment • Air Vehicles Tend to Become a Commodity in a Network-Centric Environment • UAV Systems We are Developing Today Need to Provide Growth Towards the Network-Centric Systems Environment of the Next Decade – and They Need Not Cost Any More!

### **“Common Ground Station”**

MR. JOHN MILLER, Program Manager, Common Ground Station, Motorola

### **“Computer Processors for Next-Generation UAVs”**

MR. DAVID A. TOMS, Business Development Manager, Mercury Computer Systems

Computer Processors for UAVs – Air Platforms and Ground Stations • Review of Current State of the Art in UAV Sensors and Processors • Next-Generation UAV Missions and Sensors and Future Functionality Requirements • Need for More Automated Imagery Analysis • Technology Trends in the Computer Industry that Affect UAV Sensors • How These Trends will Enable us to Meet Future Functionality Requirements • Achieving Life Cycle Cost Savings



# Unmanned Aerial Vehicles

## Platforms, Payloads & Opportunities

Given the limited number of dedicated intelligence, surveillance and reconnaissance aircraft available to theater and functional commanders, and the ever-increasing **ISR mission requirements**, the development of next-generation Unmanned Aerial Vehicles remains a critical priority for DoD and the Services. Moreover, the value of UAVs as integral nodes in distributed network-centric warfighting continues to grow, especially as **new radar, sensor, imaging, and communications capabilities** are inserted on existing and emerging platforms. Ultimately, **weaponized UAVs (UCAVs)** will be expected to perform an important role in **SEAD and other attack missions**.

AIE and SCSI are pleased to be able to offer this comprehensive agenda, which examines the broad range of UAV platforms, missions and payload opportunities. Among the critical issues addressed:

- ◆ *Navy, Air Force and Army **Missions, Needs and Initiatives***
- ◆ *Scope and Status of the **DoD UAV Master Plan***
- ◆ *UAV **Precision Targeting and Weaponization Initiatives***
- ◆ ***Manned-Unmanned Aircraft Battlefield Integration***
- ◆ *UCAVs, Global Hawk, Shadow, MRE, VTUAV, TUAV, HOVTOL, Predator and **Other Platform Development Statuses and Payload Options***
- ◆ ***LEWK Loitering Munition Program Status***
- ◆ ***SIGINT/Multi-INT, MTI, Radar, Hyperspectral Sensing, Intelligent Imaging Payloads and Opportunities***
- ◆ *Advanced **Data Links, "Comm" Nodes, and Next-Generation On-Board Processors***

Tremendous progress has been made in platform development, with a number of systems now in flight test or deployment. Now it is time to equip and arm those platforms with the latest payload systems and technologies. The market for UAVs will grow to \$3 billion worldwide by 2003. Don't miss this opportunity to stay abreast of the latest developments in this dynamic arena.

