Unmanned Aircraft Systems (UAS) for the Deployable Aerial Communications Architecture (DACA) Program

Ted Wierzbanowski
Director of UAS Airspace Integration
AeroVironment, Inc.
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Agenda

- Background
- Evolution of AV's Unmanned Aircraft Systems (UAS)
- Small UAS Overview and Video
- Global Observer Overview and Video
- Questions for Panel?

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Background

- AV has been developing small and high altitude long endurance UASs for over two decades
- Numerous communications relay demos have been performed
- Both types can be used as communications relay platforms – as envisioned by DACA.
- Remaining issues to be addressed are spectrum and size, weight, and power requirements of relevant DACA communications relay payloads
- Quick overview of AV's UAS follows

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Evolution of AV's UAS

Small UAS (sUAS)

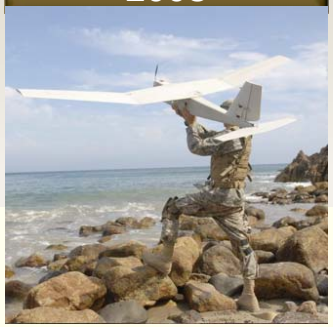
Pointer
1987

Dragon Eye
2003

Raven
2005

Wasp
2006

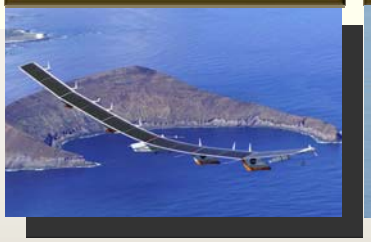
Puma AE
2008



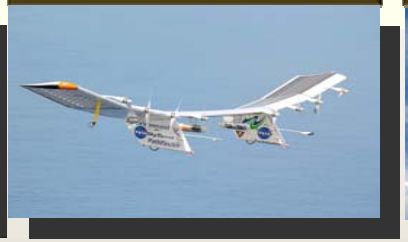
High Altitude Long Endurance (HALE) UAS

Pathfinder
1994

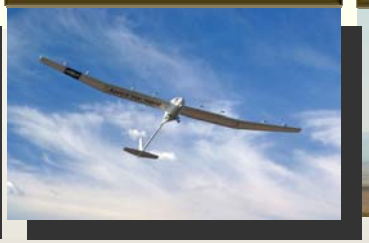
Helios
2001



Pathfinder Plus
2003



GO Prototype
2005



GO-1
2010

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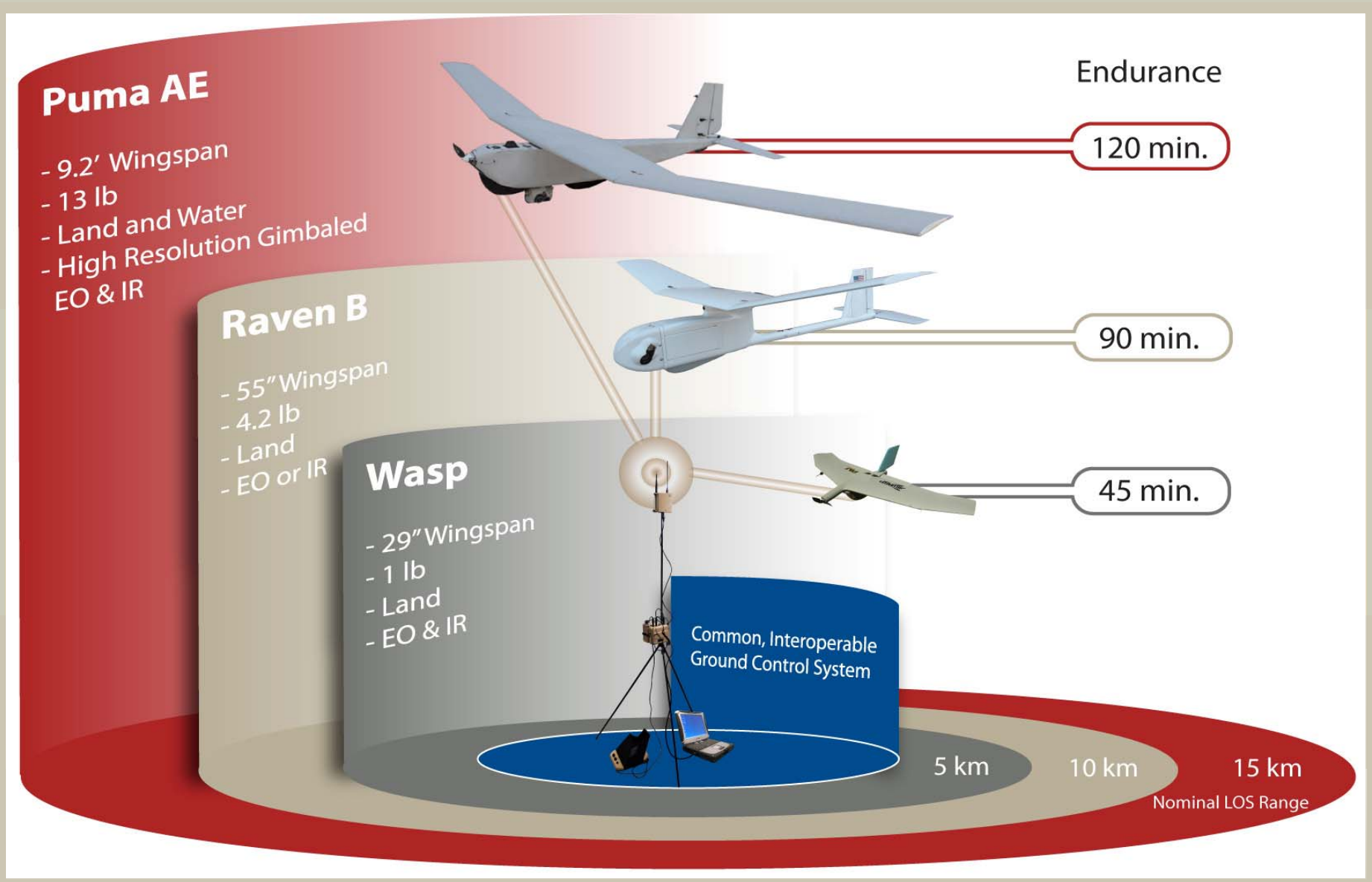
Small UAS

Available Portable ISR and Communications Relay Tools



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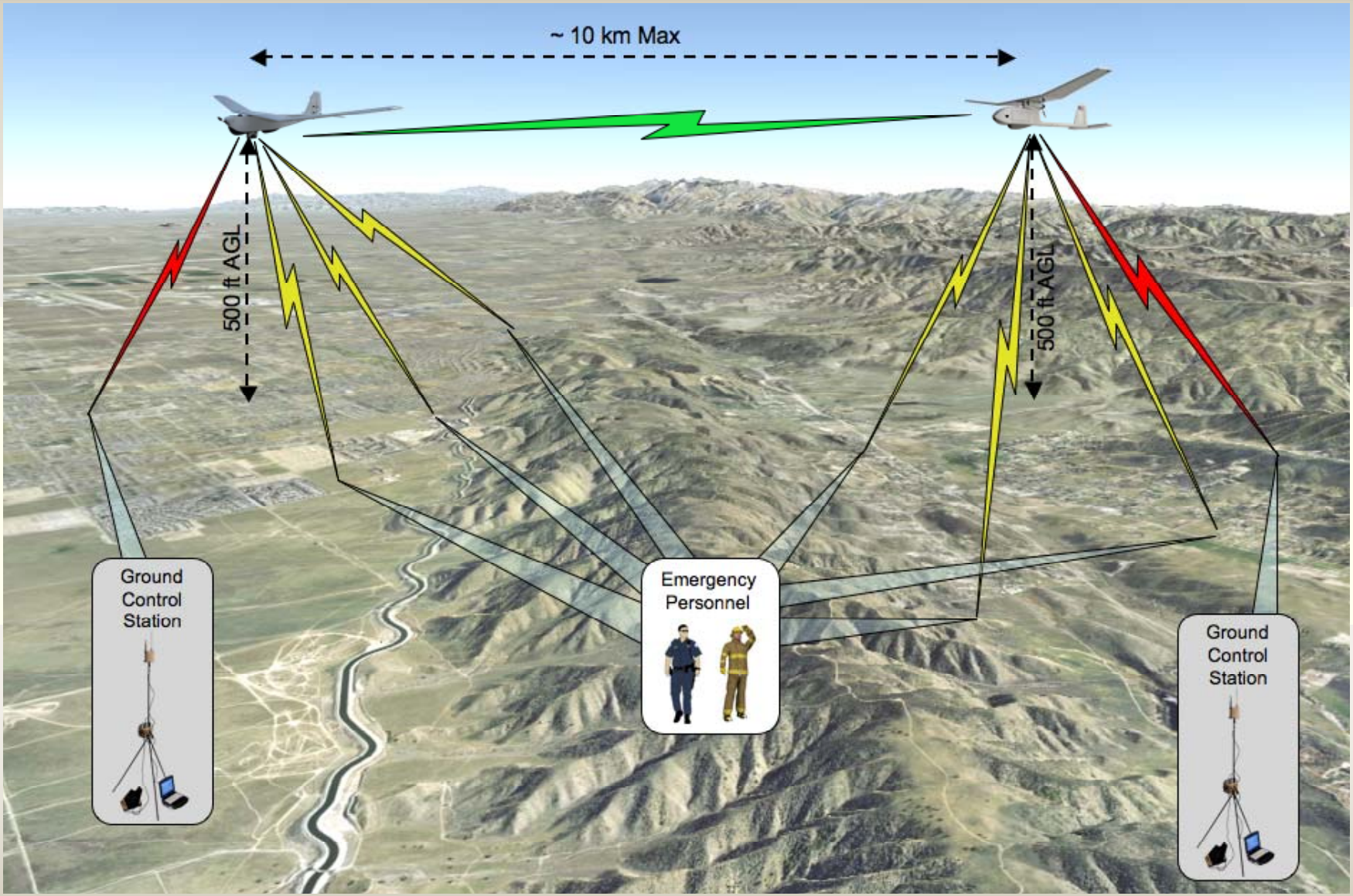
Potential Uses of sUAS for DACA



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“No Runway Required” Video

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Global Observer (GO)

Affordable Satellite-Like Capability in Development

Capable of up to 7 day flight above 50,000 ft with relevant communications relay DACA payload

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Potential Uses of GO for DACA - ABC News Clip

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Conclusion

- UASs are viable communications relay platforms for DACA
  - Small UASs are available now
  - High altitude long endurance UASs will be available soon
- Remaining technical issues to be addressed are spectrum and size, weight, and power requirements of relevant DACA communications relay payloads
- AV looks forward to working with the FCC and other partners to make DACA successful

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Questions for Panel?

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Backup Slides

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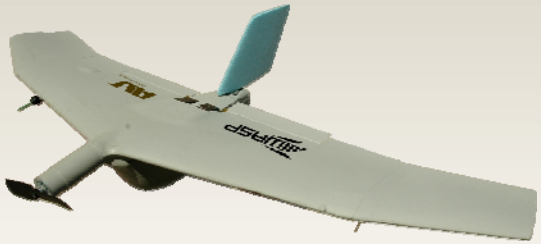
Wasp Summary

Surveillance and Reconnaissance in the Palm of Your Hand

Weight: 430-440 grams
45 Minute Endurance
GPS Navigation
5 km Range



Wingspan: 28.5”

EO or IR Camera

MICRO - BACKPACKABLE
RAPID DEPLOYMENT
HAND LAUNCHED

EO AND IR CAMERAS
FRONT AND SIDE LOOK
DIGITAL EO PTZ CAMERA

GPS NAVIGATION
SEMI-AUTONOMOUS LANDING

WINGSPAN: 28.5 INCHES
SPEED: 20 TO 40 MPH

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Raven Summary

The Most Deployed SUAV in the World - 14,000+ Delivered to Date

IRAQ

4.2 Lbs.
90 min. Endurance
Battery Powered
10 km Range
150 to 1000 ft. Operating Altitude

BACK PACKABLE
RAPID RESPONSE
HAND LAUNCHED

FRONT & SIDE VIEWS
EO or IR CAMERAS
DIGITAL EO Pan-Tilt-Zoom (PTZ)

GPS - AUTO NAVIGATION
(P(y)-code or SAASM GPS)
VERTICAL LANDING

CUSTOMERS
US ARMY, SOCOM, USMC, USAF, FBI

Visible / IR strobe for night operations

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Puma AE (All Environment) Summary

Land Based or Maritime Operations

13 lbs.
2 Hour Endurance
Battery Powered
Operating Altitude (Typ) 500 ft.
15 km Range

MAN PORTABLE
RAPID RESPONSE
HAND LAUNCHED

QUIET
GPS - AUTO NAVIGATION
(SAASM GPS)

EO, IR & LASER PAYLOAD
Retractable, Gimbaled Payload
VERTICAL LANDING

Common Ground Control Station
With Raven and Wasp UAS

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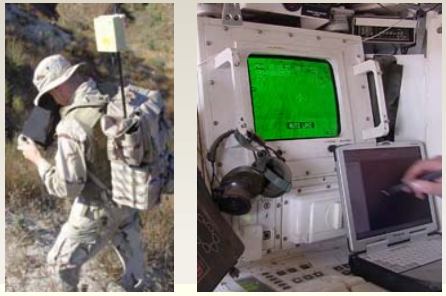
Ground Control Station (GCS)



Fixed or Mobile Operation on Foot or in Vehicle

Hand Controller

- Common GCS for Wasp, Raven, Puma AE
- Weight: 7 lbs (without laptop)
- Main components
  - Hand Controller
  - Hub
  - RF Unit
  - Laptop
- Rugged construction, proven in hundreds of thousands of operation in the field
- Hot-swappable battery

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