Micro Aerial Vehicles
An EADS Perspective

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# Micro Aerial Vehicles - An EADS Perspective

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## Abstract

See also ADM001689, EOARD-CSP-03-5073 Micro Air Vehicle Workshop., The original document contains color images.

## SUPPLEMENTARY NOTES

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## Number of Pages

11
Organisation
ISR within EADS

Airbus
Military Transport Aircraft
Defence and Security Systems
Space
Aeronautics

Missiles
Military Aircraft
Defence & Communication Systems
Defence Electronics
EADS Services

- Naval & Air Defence
- ISR Systems
- C3I Systems
- Public Safety
- Communication & Information Networks
ISR covers the complete range of UAVs:

- High Altitude Long Endurance (HALE)
- Medium Altitude Long Endurance (MALE)
- High Speed Tactical UAV
- Vertical Take-Off & Landing UAV
- Slow Tactical UAV
- Micro-Air Vehicle
- Unmanned Ground Vehicle
MAV in EADS

- EADS does not sell UAV’s but ISR systems, e.g. for
  - Local / close-up range, hidden, real time situation awareness
  - Over the hill reconnaissance and urban missions
  - Homeland security
  - Civil application (police, fire brigade)
- MAV compete against any other kind of urban intelligence:
  - Local or parachute cameras
  - Distributed (noise, BC, …) sensor networks
  - Communication intelligence, etc.
- Desirable properties of a MAV platform must be analyzed and subsequently improved
  - Man transportable; low-cost; easy-to-use; easy-to-maintain; reliable; enduring; sufficient range; interoperable
  - Sharp, stable day-and-night pictures / sensors
  - Low-noise & visibility; reliable, real-time link; operable in buildings
MAV in EADS

- Today, demonstrators but no “product”
- Full system required, including
  - Concept of operations
  - Platform, Communication, Ground Segment, Infrastructure
  - Training, Life Time Support
- Low-end UAV system
  - Low price (< 10 kEUR)
  - Large numbers (> 1000)
  - Frequent upgrade cycles
- Rather marketing than business case
  - Total EADS market < 100 MEUR in xx yrs
- Create MAV family, e.g. fixed-wing / rotary
  - Adopted to mission
  - Interoperable
German MAV – Competitive Testing

- BWB plans competitive testing early 2004 (twice delayed!)
- Acquisition of demonstrator systems planned after
- Market availability assumed
- EADS DO-MAV to be demonstrated to DGA, UK DPA (JUEP)
MAV – a business case?

- EADS ISR is primarily a system leader
  - ISR is a lead system integrator
  - Focus on the most cost efficient available technology
  - Integrate in ISR system tailored to customer needs
  - Simple handling & reliability more important than fancy features

- MAV must be a business case
  - Money wise
  - Marketing wise
  - Technology wise
MAV – a business case?

• Money wise
  – MAV assumed to be a low-cost, high tech product
  – Technology must allow for series production
  – Components should be COTS
  – No high development cost up-front

• Marketing wise
  – Be quick - Technology should leave university & labs as soon as possible and must allow for immediate realization
  – Spiral development - Start simple and upgrade

• Technology wise
  – No over-design - New technologies must allow for better, cheaper, simpler, new solutions
MAV – Research / Industry Relation

- **Research**
  - Bring first demos rather than ideas
  - Short-term results & stepwise improvements
  - Flexibility to react quicker

- **Industry**
  - Limited to applied research and product development
  - Watch research market
  - Flexibility to act quicker
  - Invest into (few) promising technology approaches
  - Link between customers and research facilities
MAV – Customer Relation

- Public Customer
  - Public customers with complex procurement structure adverse to acquisition of simple, cheap new systems (Mil, Gov)
  - Long lead times to develop ConOps, request funding
  - Exception: US FCT, SOCOM, GE “Einsatzmittel-Sofortbedarf”
  - Own research institute structure to support military needs
  - (Europe: Limited) funds for product development at industry
  - ConOps rather mission-driven, special requirements regarding availability, all-weather, all-day etc.

- Civil Customer
  - Buys only off-the-shelf
  - All lead investments to be carried by industry
  - Highly unpredictable: compare to satellite / mobile phone story
  - “ConOps” purely cost-driven, flexible wrt environment conditions
Summary

- EADS understands itself as a system house
- Thus, we are interested in new technologies and capabilities arising from the MAV concepts & technology
- The MAV itself is only one part of one possible solution to a specific requirement
- Company investments will therefore be limited at this stage and aim at short-term results (first sales), with options for spiral development
- Investment will aim at system improvement rather than technological "gimmicks"
- Relevant fields are given by operational needs (in-house communication, reliability of total system, handling, etc.)

No single feature has a value in itself

- Companies will share customer research & development money with research institutes but current budgets are small