



MINISTÈRE DE LA DÉFENSE

## Views on Mini UAVs & Mini UAV Competition

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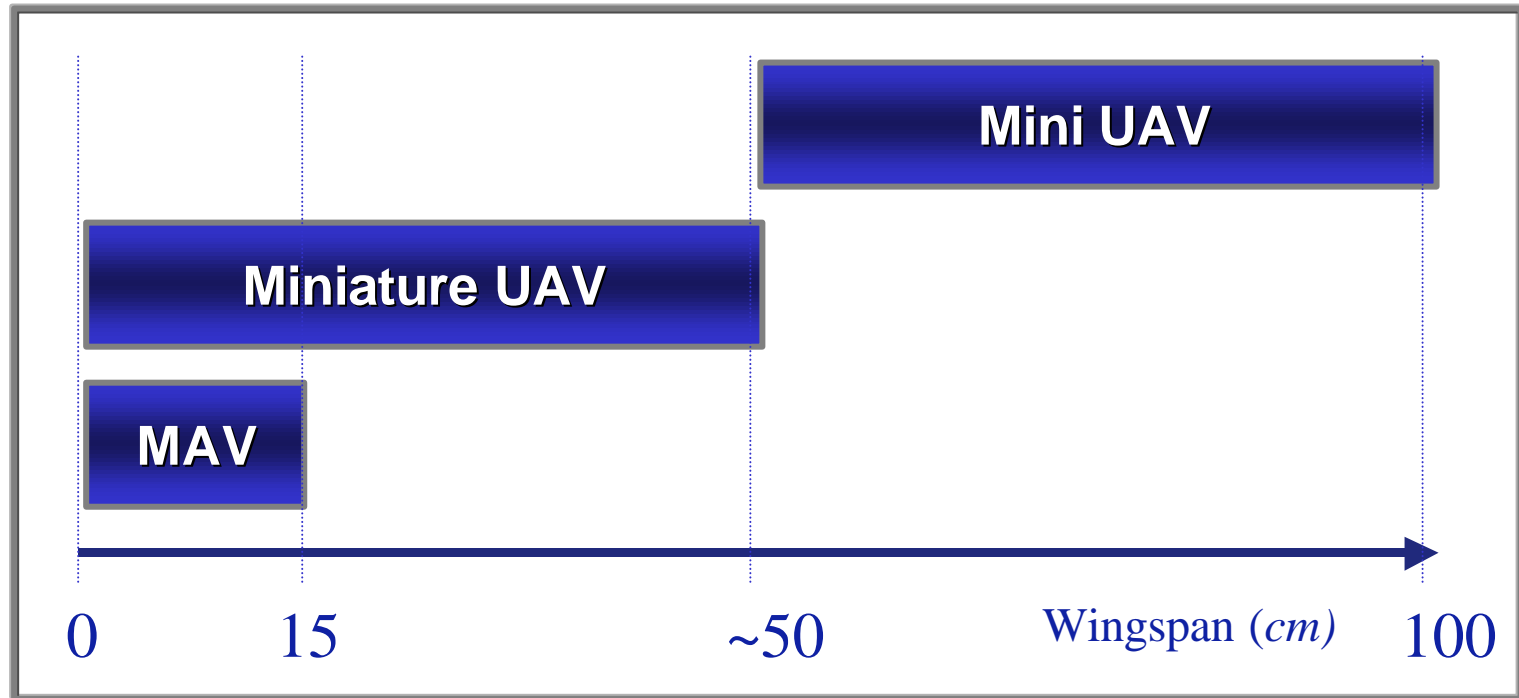
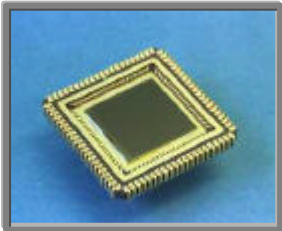
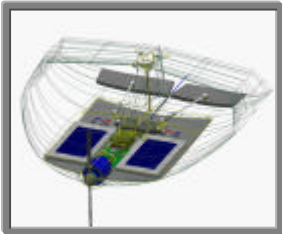
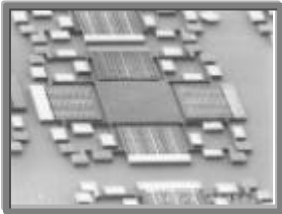
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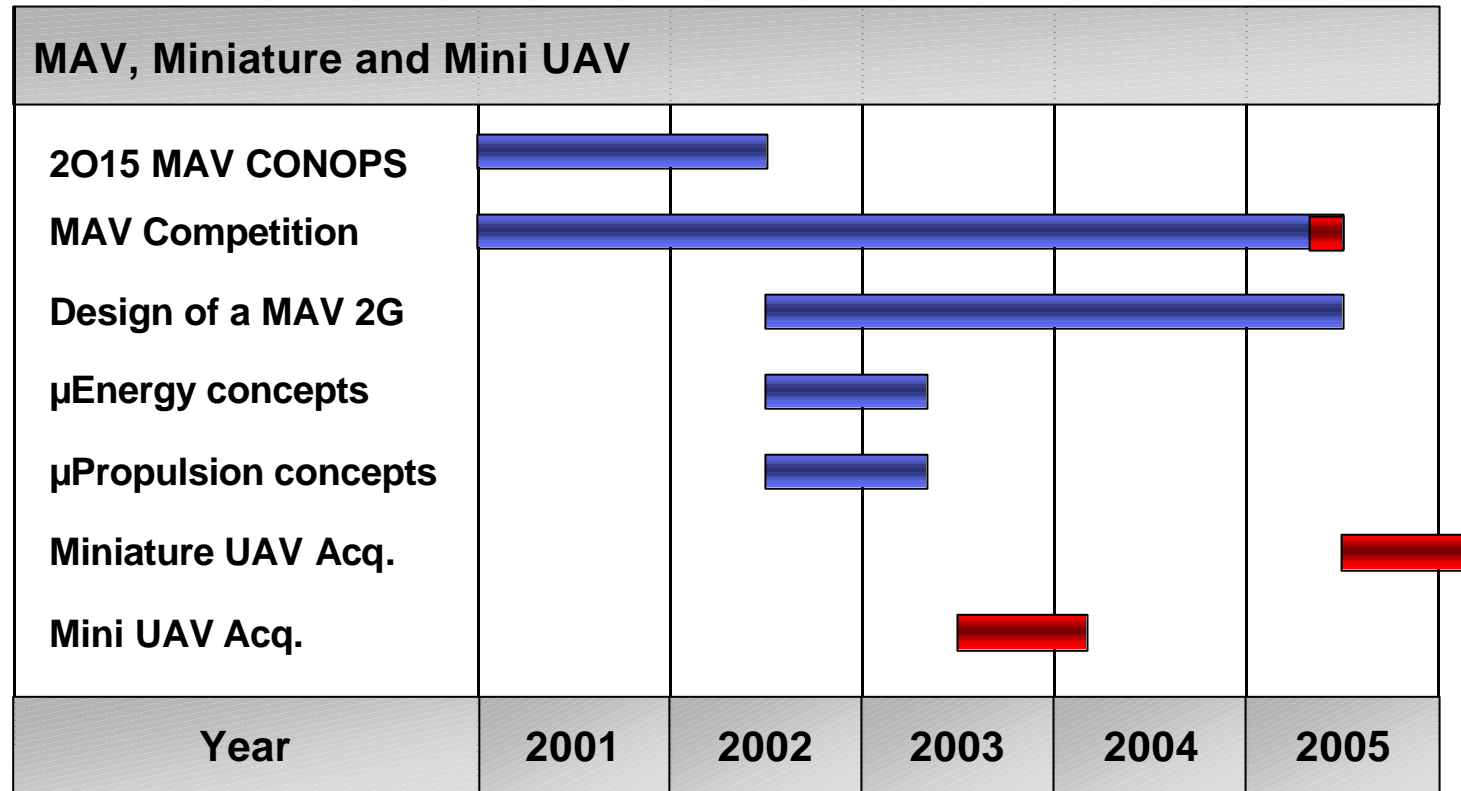
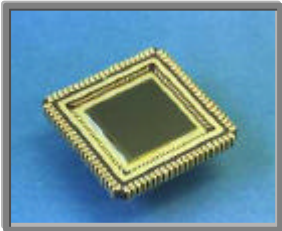
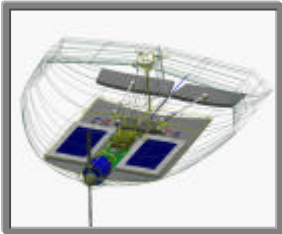
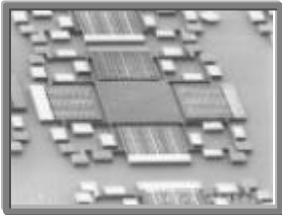
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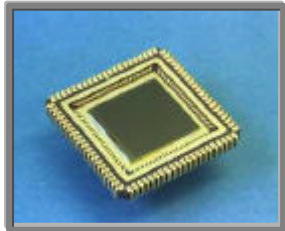
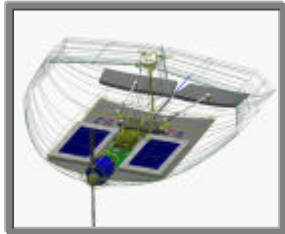
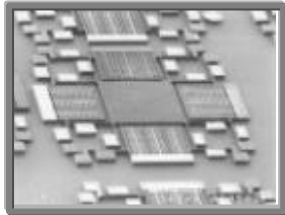
# « French Definitions »



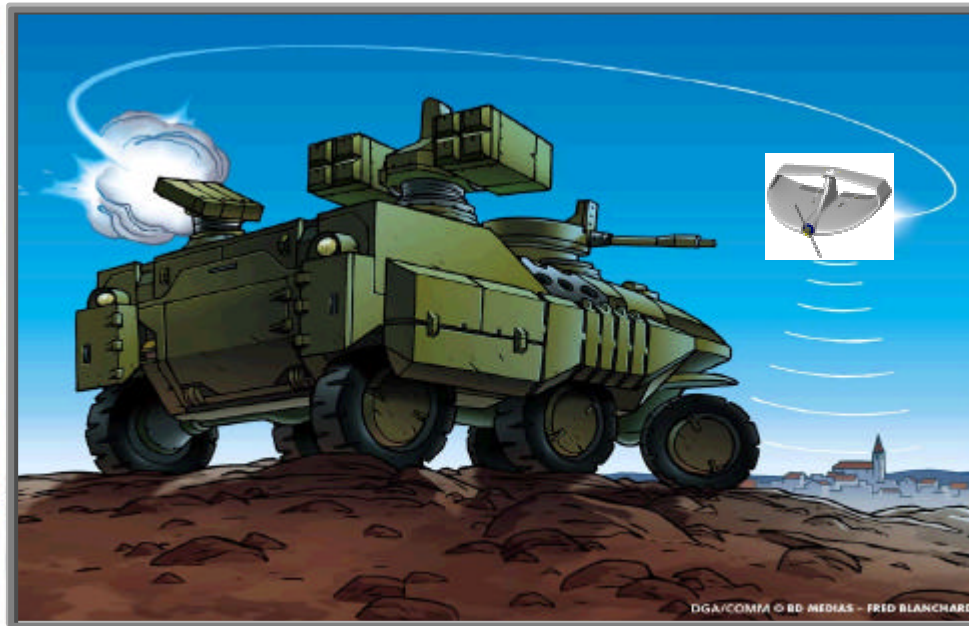
# French Mini & Miniature UAV Roadmap



# Operational Needs

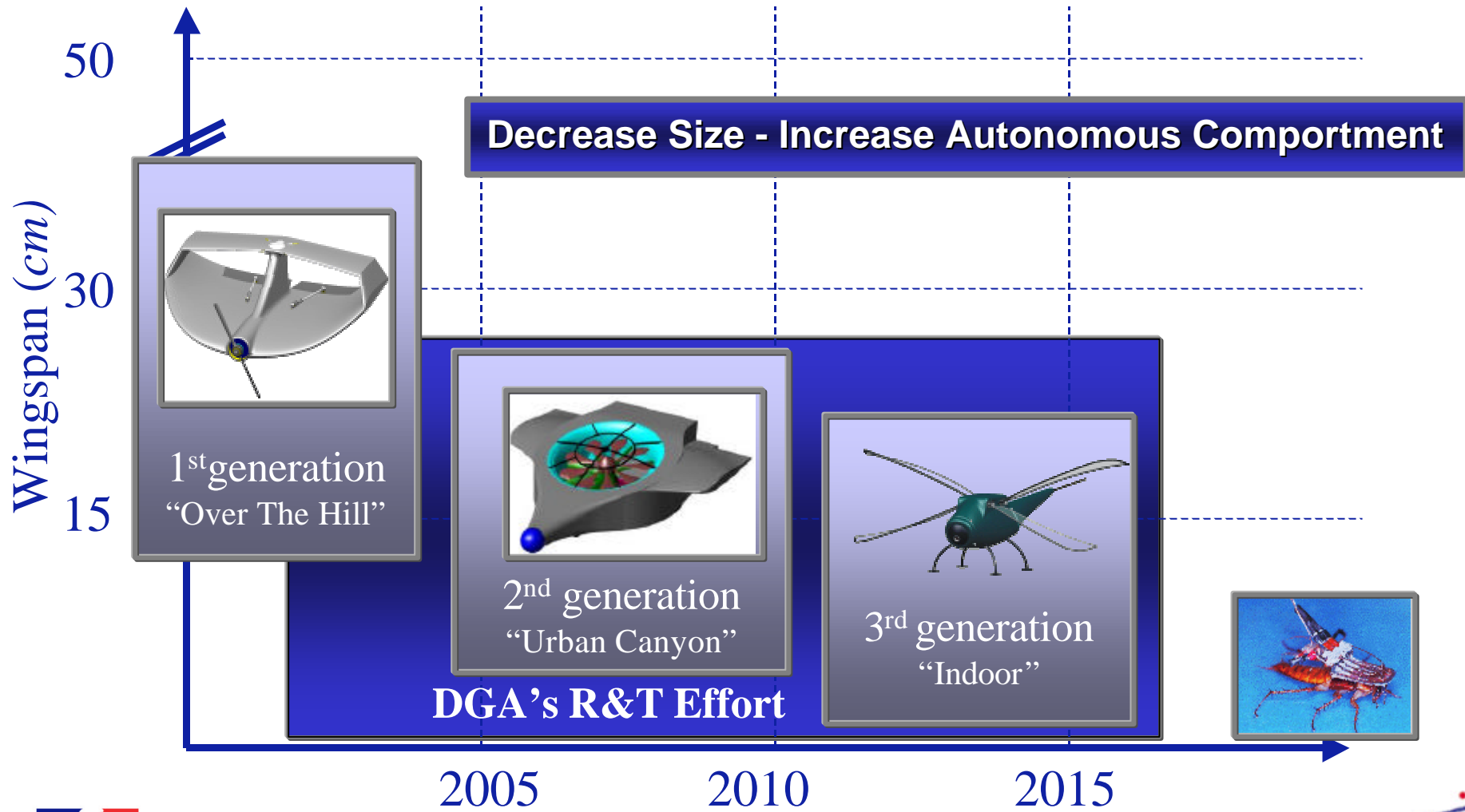


Local Situational awareness for small units

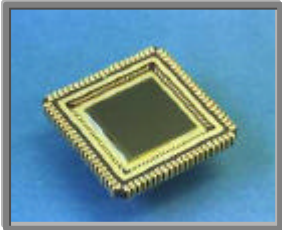
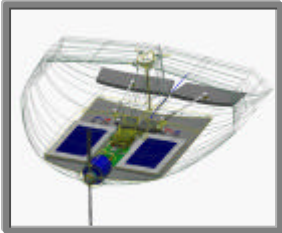
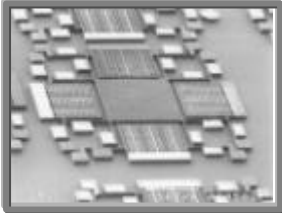


Urban Intelligence for Army & Special Ops Corps

# Miniature UAV Evolution



# Assessment of Operational Scenarios



**Scenario 1**

**Observation in Open Space**

**Scenario 2**

**Observation in Urban Area**

**Scenario 3**

**Indoor Observation**

**Scenario 4**

**Ahead of a Platoon in Dangerous Env.**

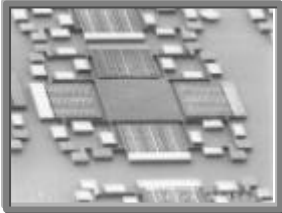
**Scenario 5**

**Target Designation**

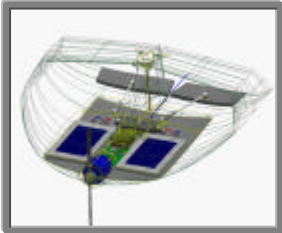
**Scenario 6**

**Armed MAV : Attack on a Fixed Target**

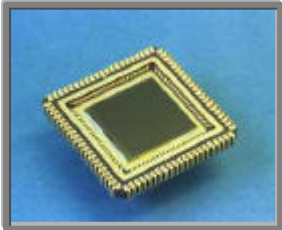
# R&D efforts focus on MAV2 & MAV3



Aerodynamics of low Reynolds (<5000)



$\mu$ Energy sources &  $\mu$ Propulsion concepts



MEMS for  $\mu$ actuators and  $\mu$ sensors ( $\mu$ Cameras,  $\mu$ gyros...)



Data Link

User Interfaces

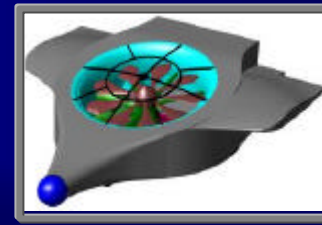
... no technological legacy from other UAV Systems

# R&T efforts focus on MAV2 & MAV3

On-going Studies

Design of a 40-cm VTOL Miniature UAV

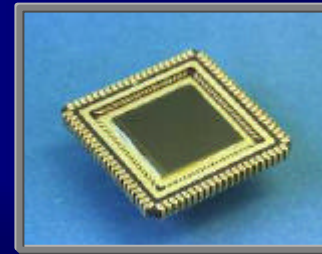
Aerodynamics of low Reynolds (<5000)



Engagement  
in Urban Area

$\mu$ technologies:

- $\mu$ Propulsion
- $\mu$ Energy sources
- $\mu$ actuators
- $\mu$ sensors ( $\mu$ Cameras day/IR,  $\mu$ gyros...)



Comms dedicated to urban area

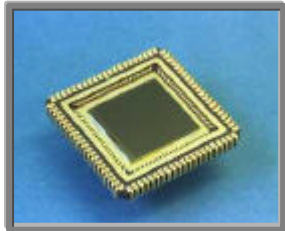
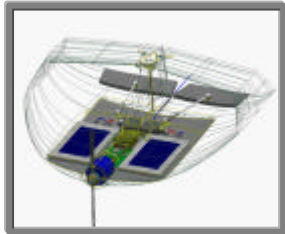
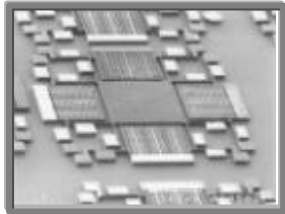
Positional calculation  
User Interfaces  
Autonomous Navigation



Next



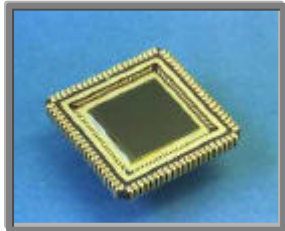
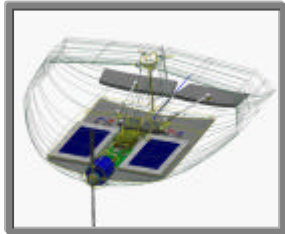
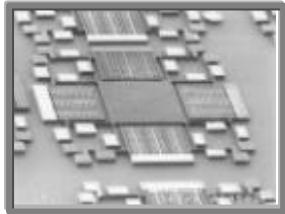




# 2005 MAV International Competition



# Inter. MAV Competition funded by DGA



**Objective**

**Stimulate University interest in MAV Research Field**

**Duration**

**3 ½ years (for Funded Universities)**

**Grants**

**French Schools of Eng. & Univer. will be funded (€40 K min.)**

**Co-operation**

**Co-operation between French and abroad Univ. will be apprec.**

**Competitors**

**No Limitation (International)**

**Competition**

**July 2005**

**Location**

**Dreux-Senonche - Former NATO Air Force Base (Tentative)**

**Judging Board**

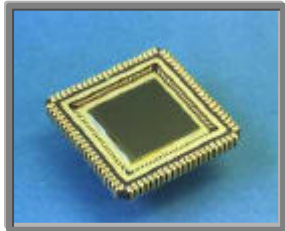
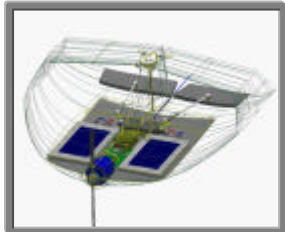
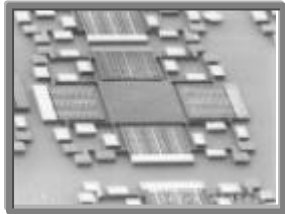
**Mainly European and International**

**Prize Awards**

**To Be Defined ( ±€15 K from DGA) + Companies Contribution**



# Overview of Competition Schedule

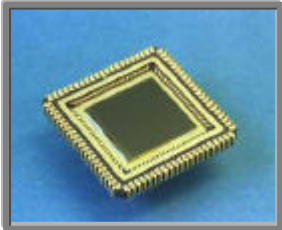
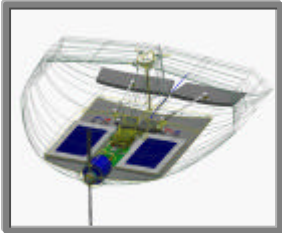
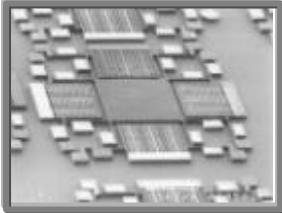


About 20 French Teams will be funded (40 K€ minimum each)

French Teams Funded by DGA	Mil. 1	Assessment of French competitors	Feb. 2003
		Funds to Successful Teams	Mar. 2003
	Mil. 2	Asses. of new French competitors	June 2003
		Funds to Successful Teams	July 2003
		Work Progress Assessment & <i>In-flight Tests</i>	2003
	Mil. 3	Work Progress Assessment & In-flight Tests	July 2004
International Competition			July 2005
Foreign Competitors			



# Competition Missions



Missions will be a mix between:

Urban Canyon Flight

Platoon Escort

Fixed Target Designation



Stationary Flight Capability