

Yet Another Paparazzi

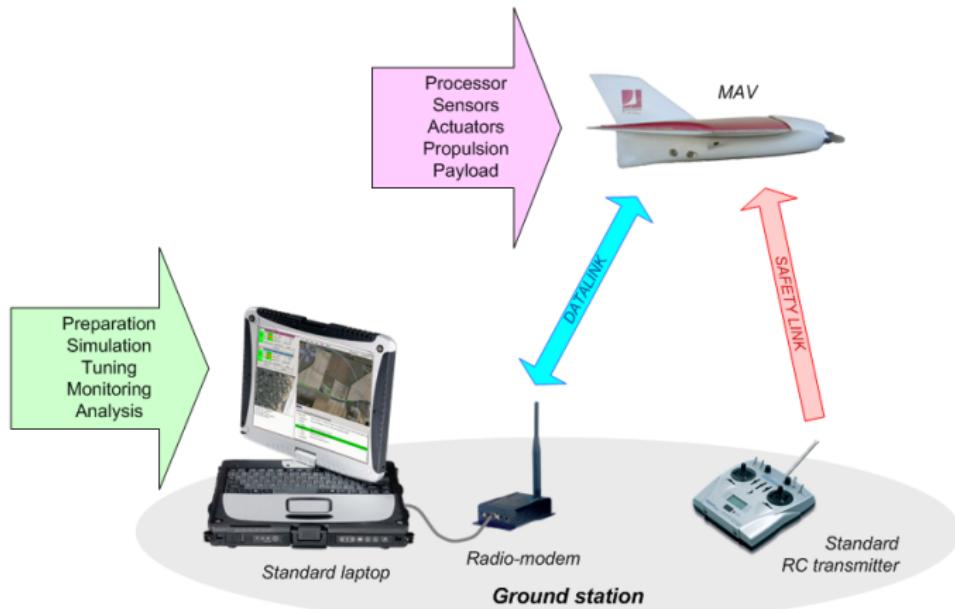
P. Brisset, M. Bronz, M. Gorraz and J. Tyler

ENAC

March 2008



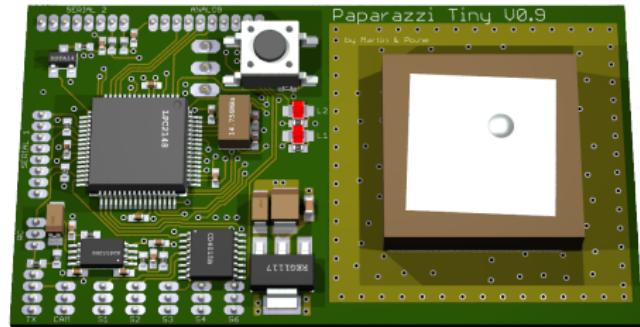
The Paparazzi System



Autopilot

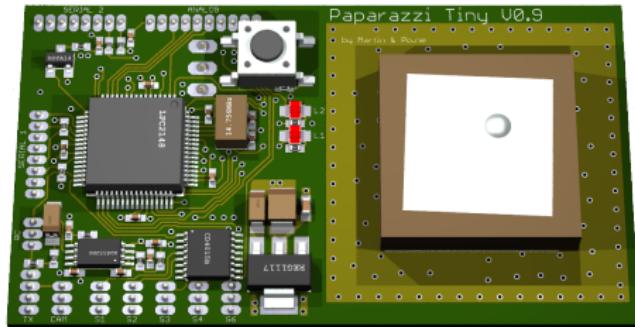


- Processor
- GPS
- Power supply
- 20g

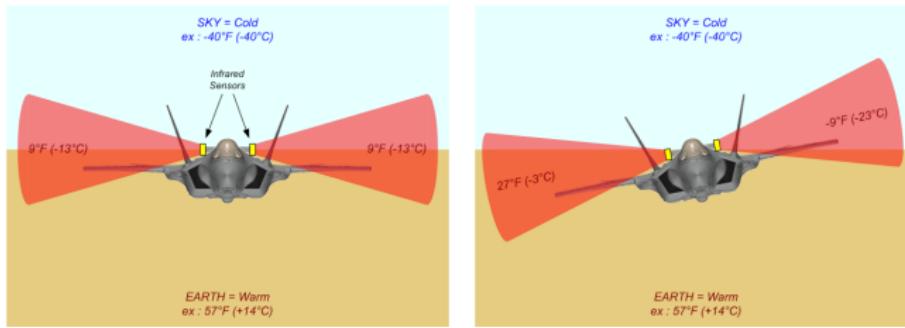




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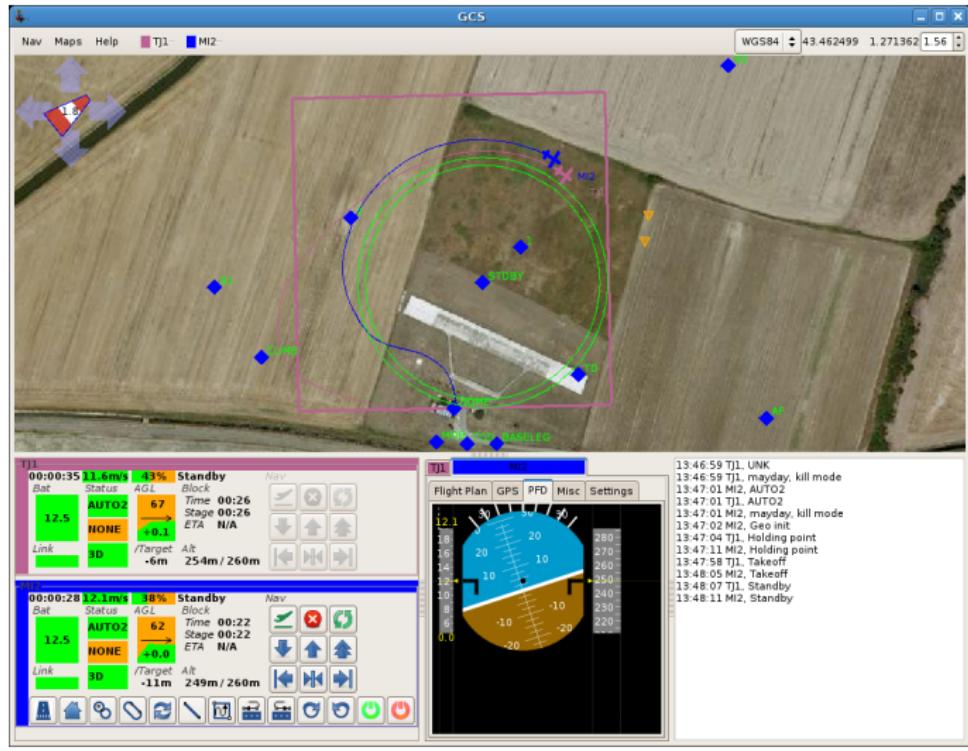


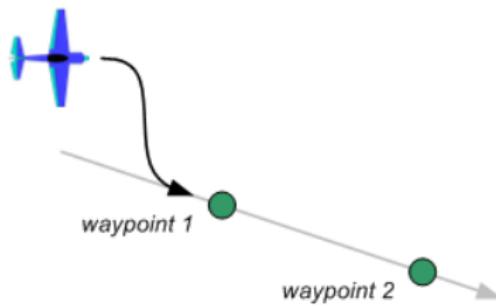
Attitude Estimation with Infrared

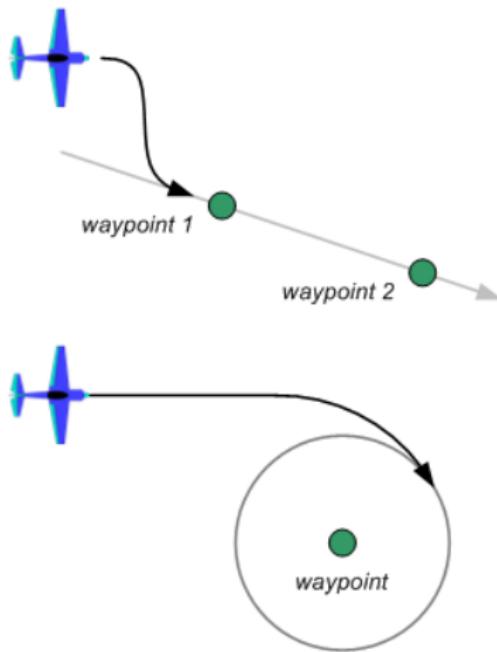


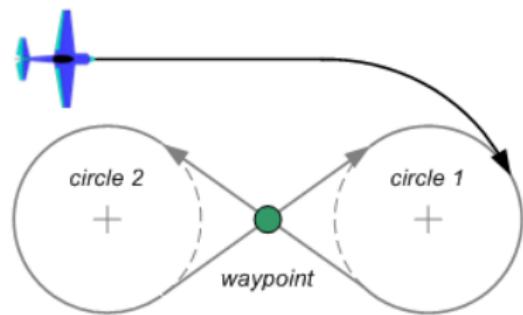
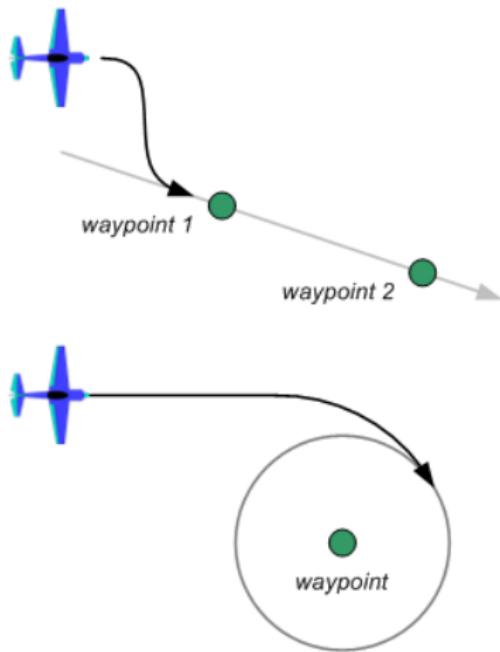


The GCS

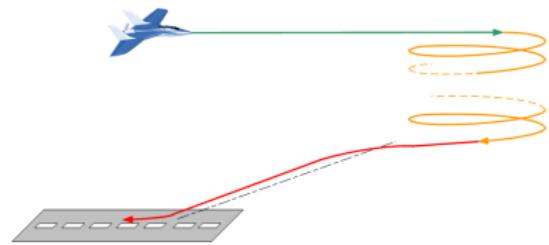
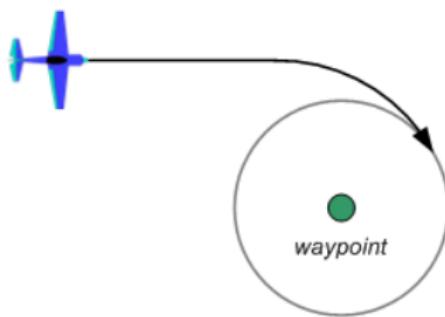
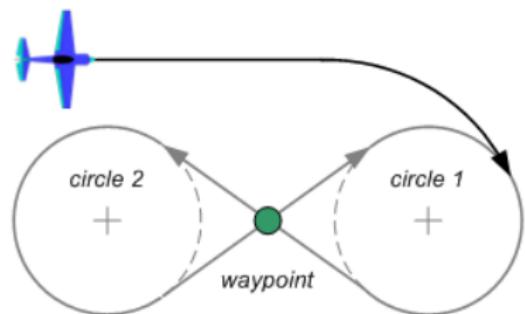
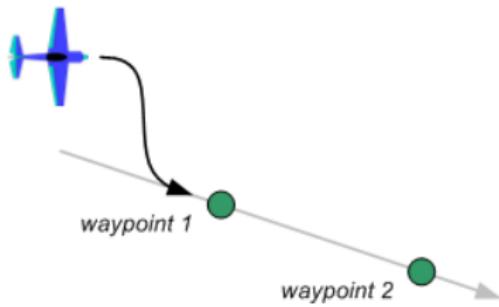




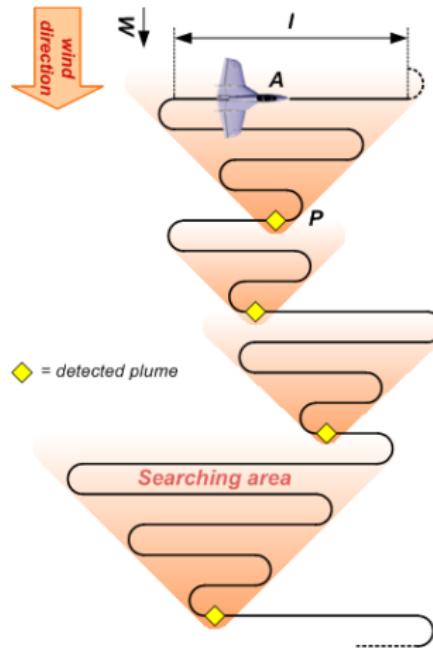




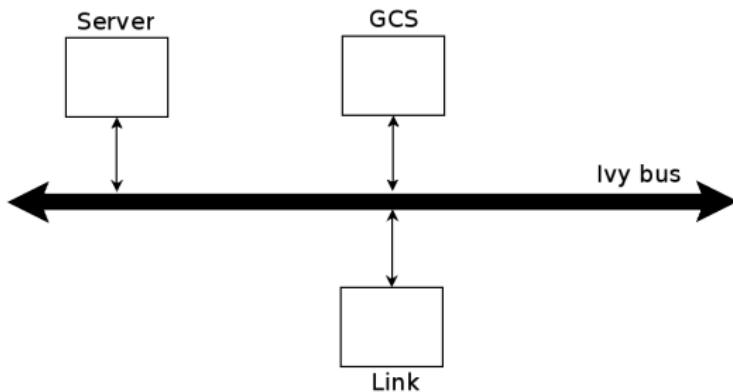
Flight Plan



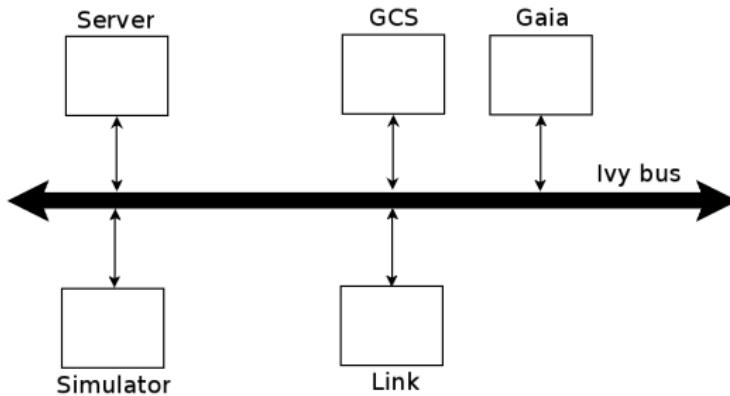
Flight Plan



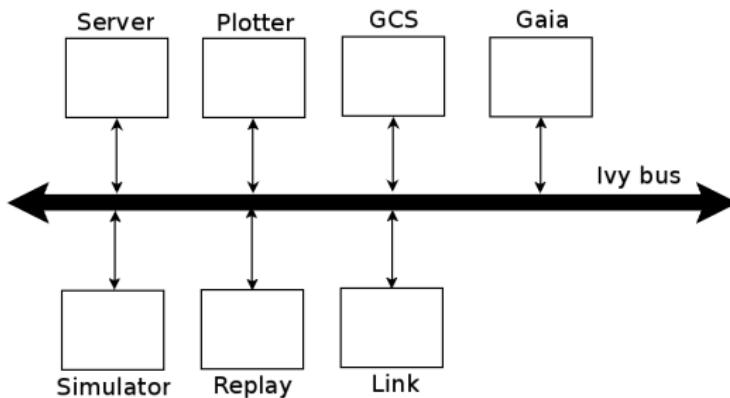
A Distributed System



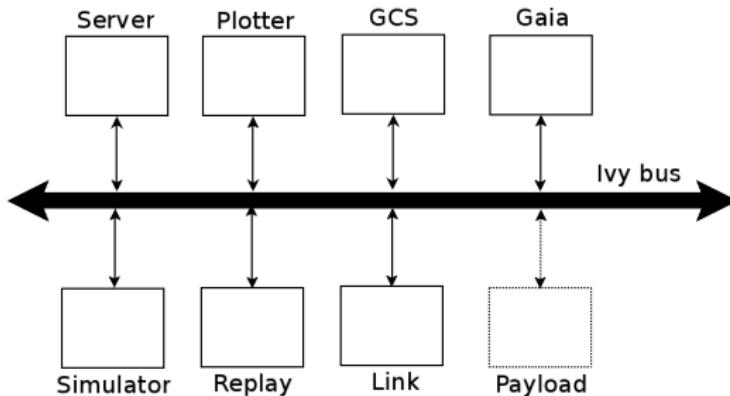
A Distributed System



A Distributed System



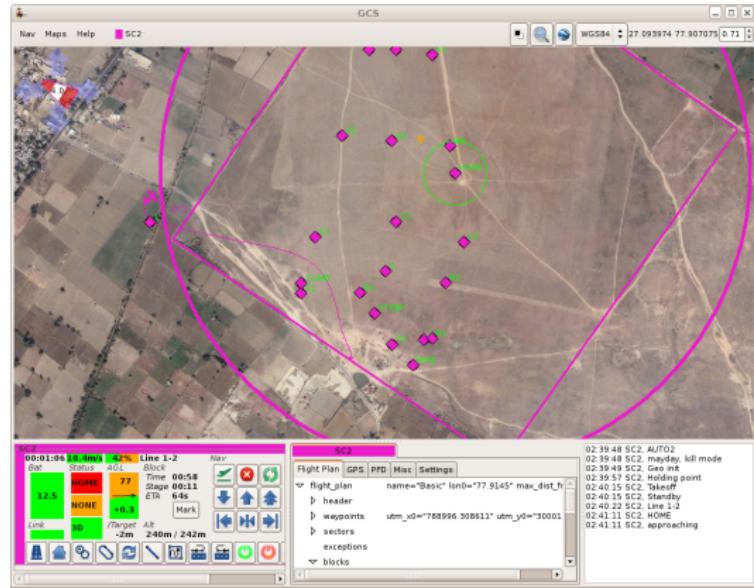
A Distributed System



Safety



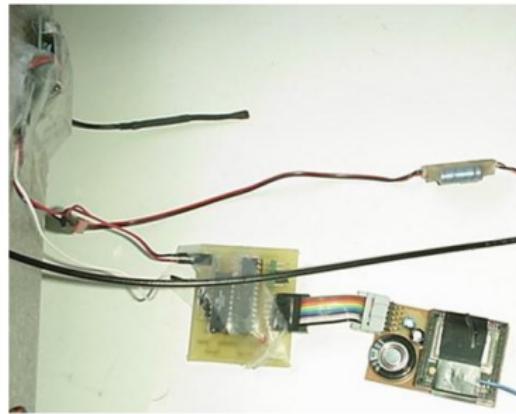
- Simulation
- Failsafe modes
 - Battery
 - NO GPS
 - Home
 - Kill
- GCS
- Extensive testing



History of the Project



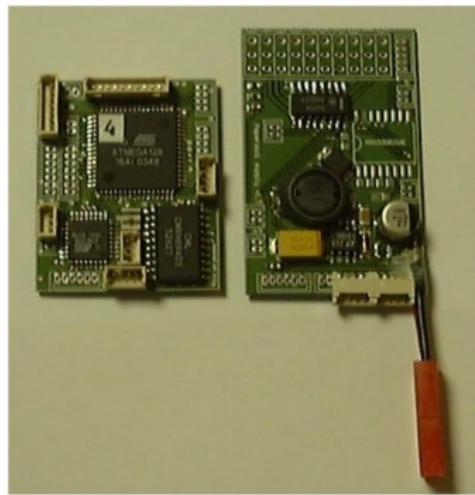
2003



History of the Project



2004



History of the Project



2005



History of the Project



2006

History of the Project



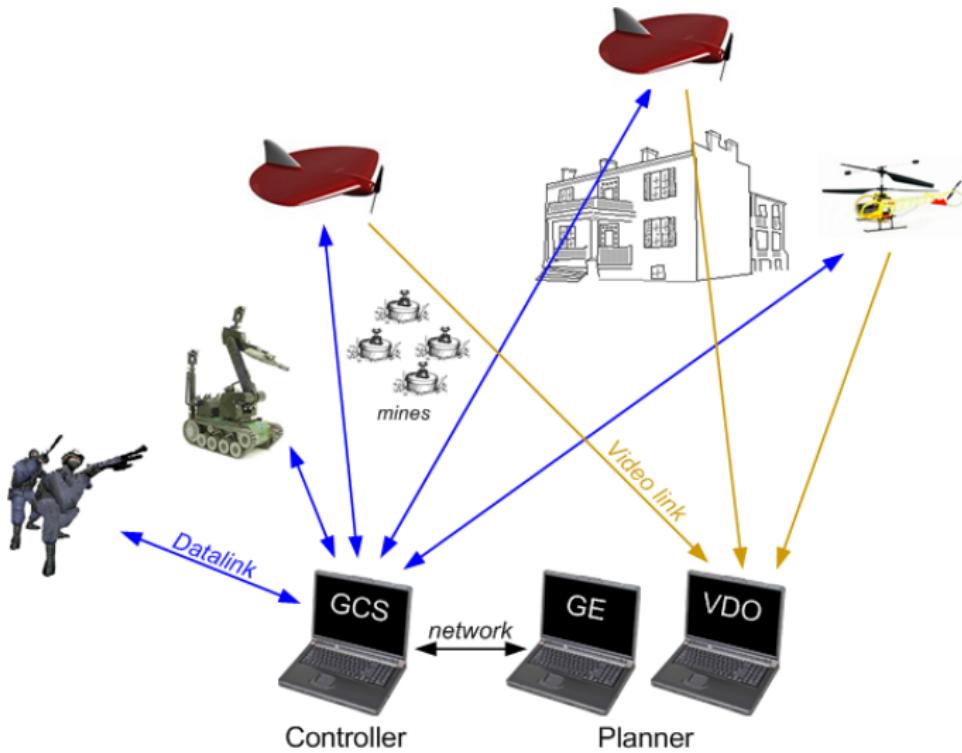
2007



Previous MAV Competitions

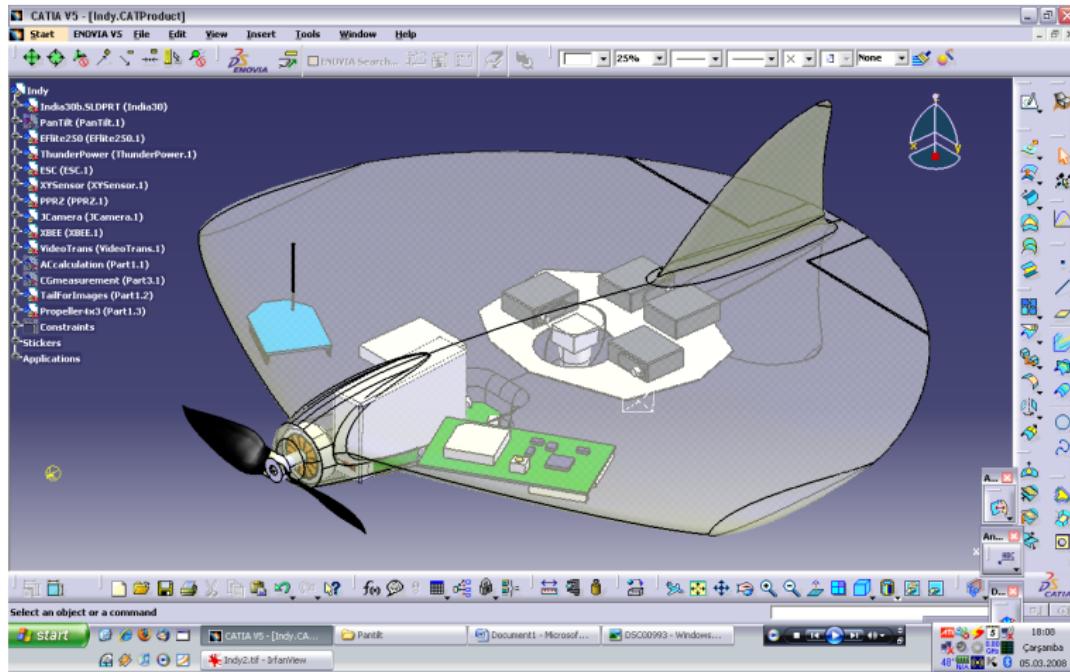


- JMD03, Toulouse, France: 1st place with the Twinstar
- EMAV04, Braunschweig, Germany: 1st place with the Microjet
- JMD04, Toulouse, France: 1st place with the Microjet
- MAV05, Garmisch, Germany: 4 Paparazzi teams at the first 4 places
- EMAV06, Braunschweig, Germany : all the teams were equiped with Paparazzi
- MAV06, Sandestin, Florida: 2nd and 3rd places
- MAV07, Toulouse, France: 1st place (tie), 3rd, 4th and 5th places

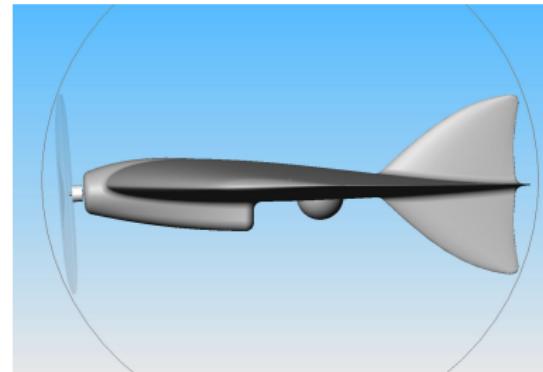
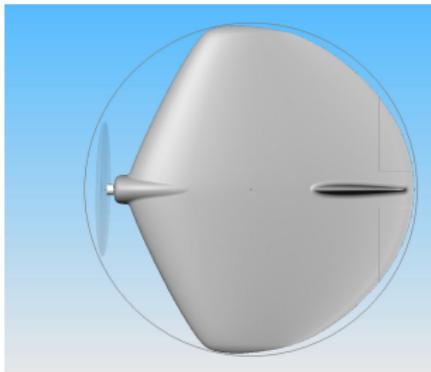




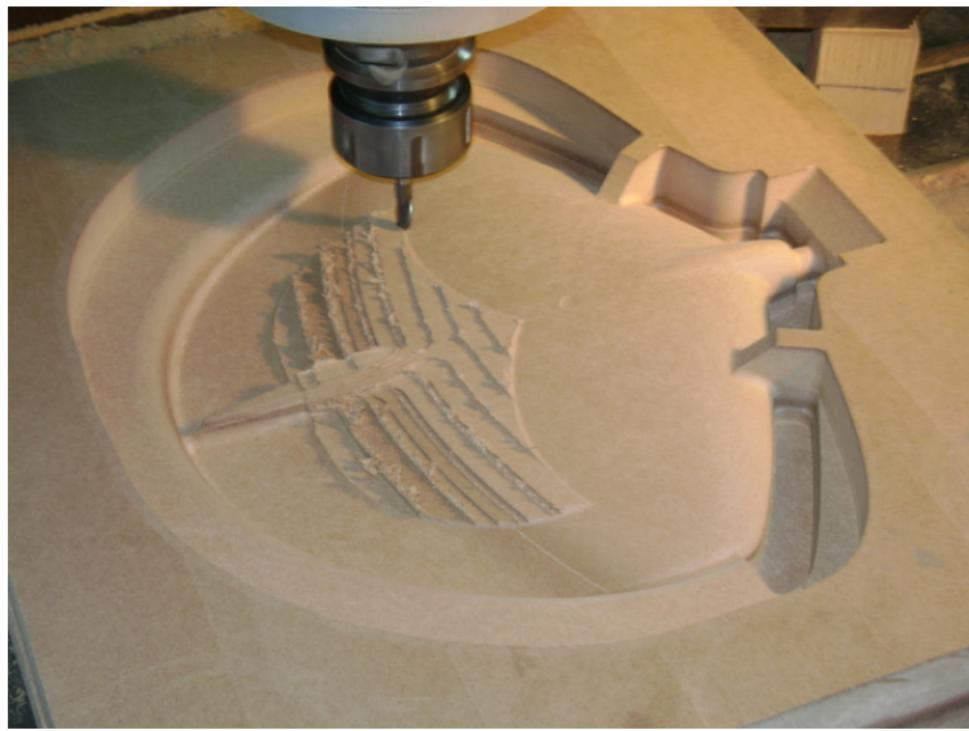
The Slicer



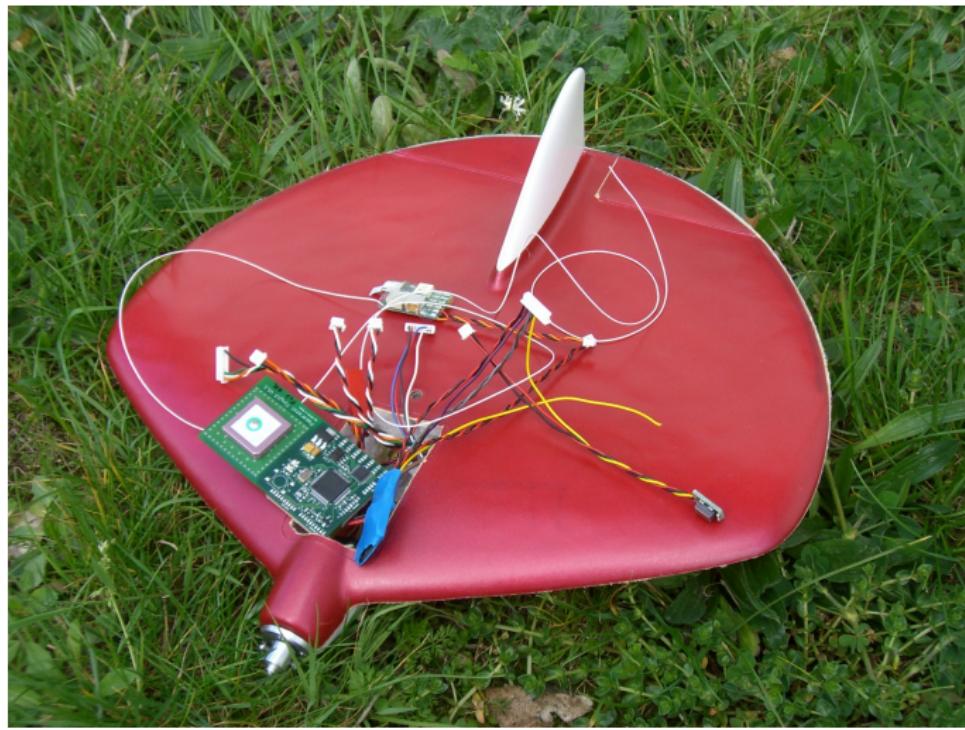
The Slicer



The Slicer



The Slicer



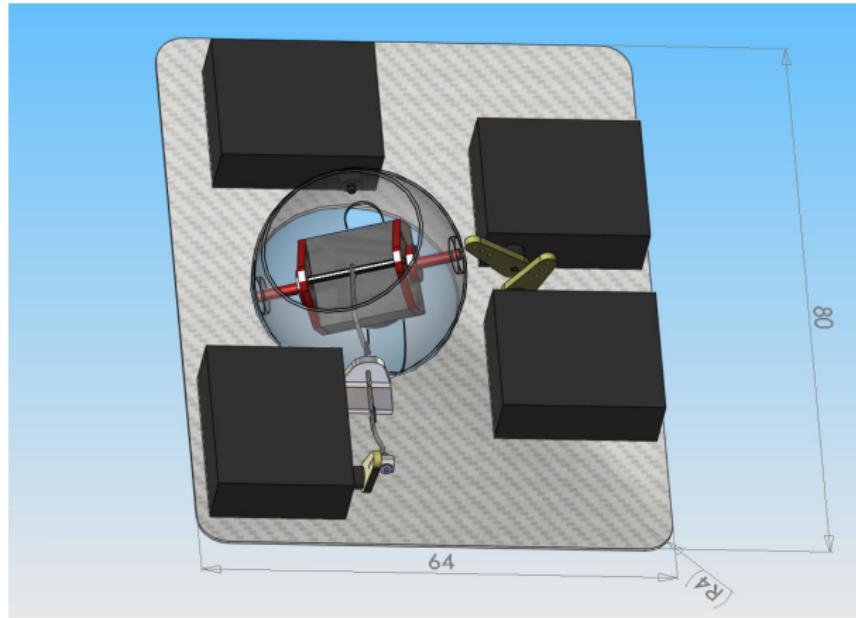


Weight Breakdown



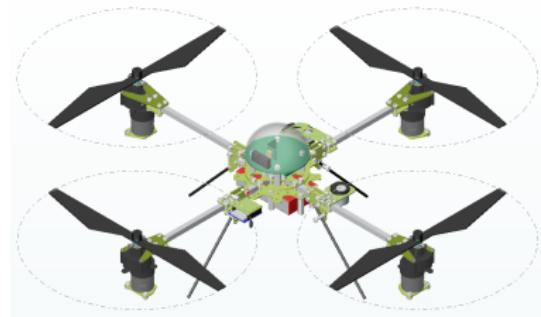
Part	Description	Grams
Airframe	Kevlar skins + EPP core	65
Propulsion	Brushless motor + Lipo battery + controller	85
Avionics	Autopilot + sensors + modems	45
Payload	Pan tilt camera + transmitter	30
Total		225

Mobile Camera





- Testbed



Helicopter



- Testbed
- 30cm Twisted Logic Coaxial Helicopter





- Testbed
- 30cm Twisted Logic Coaxial Helicopter
- Control
 - Attitude from mechanics
 - Yaw stabilization (gyro + magnetometer)
 - Vertical stabilization (accelerometer + barometer/rangemeter)
 - No navigation yet

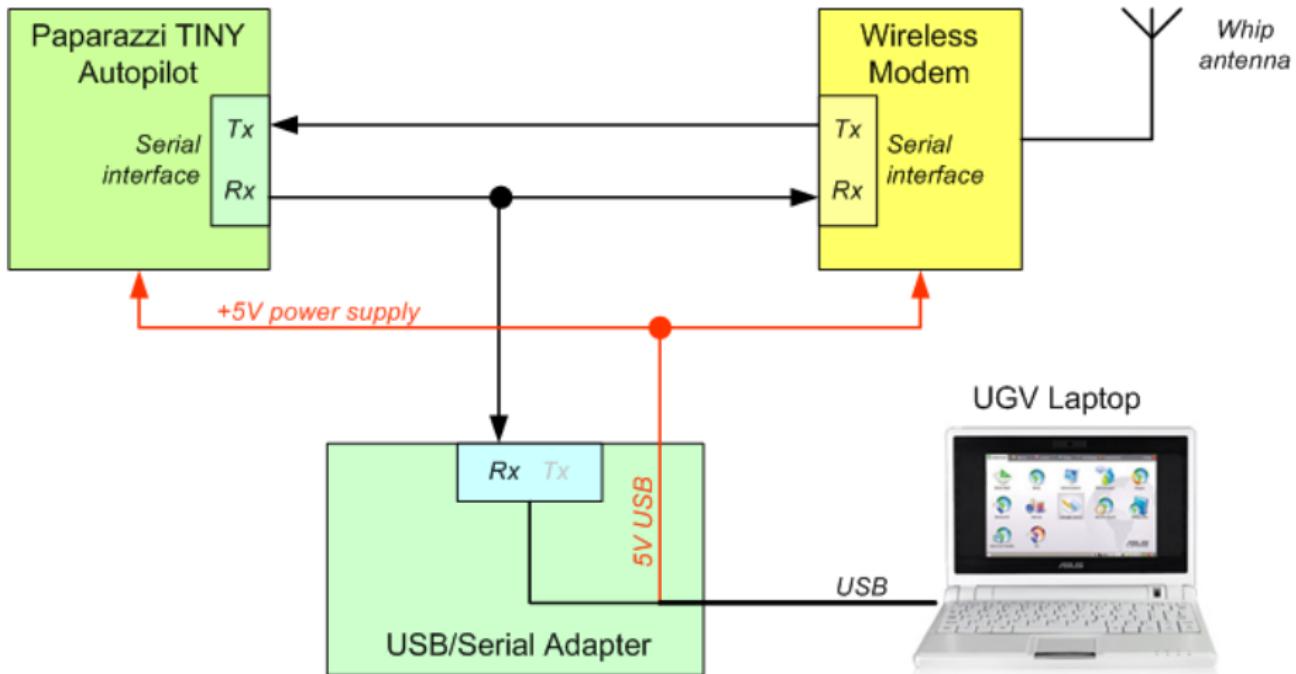




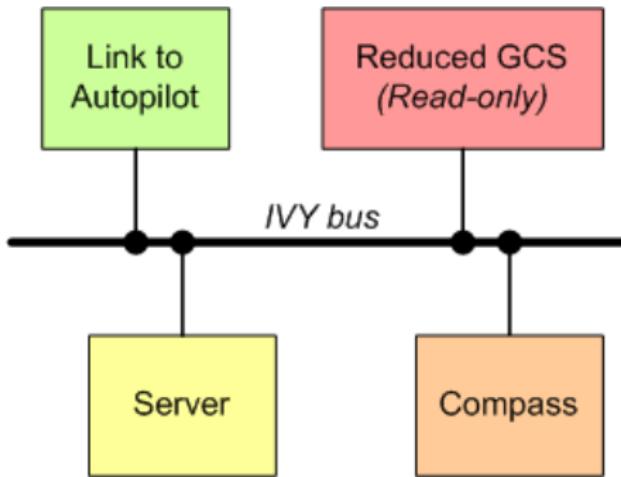
- Testbed
- 30cm Twisted Logic Coaxial Helicopter
- Control
 - Attitude from mechanics
 - Yaw stabilization (gyro + magnetometer)
 - Vertical stabilization (accelerometer + barometer/rangemeter)
 - No navigation yet
- Not fast enough to safely fly outdoor



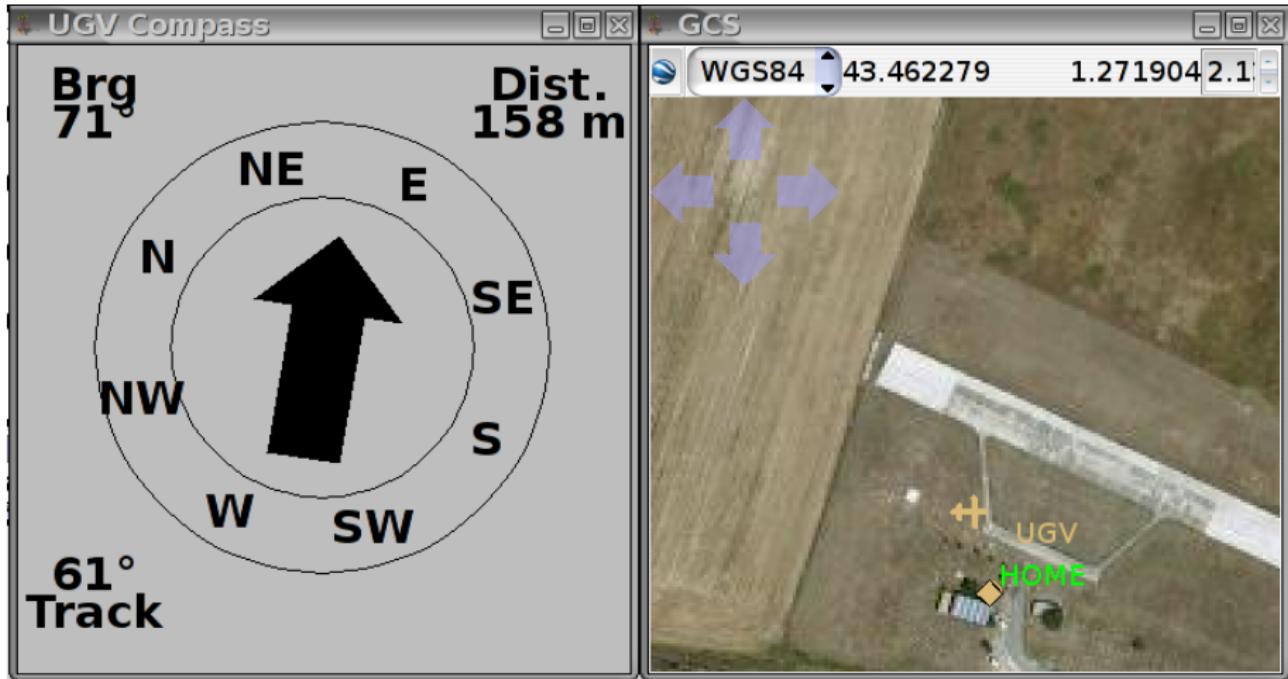
The UGV (Hardware)



The UGV (Software)



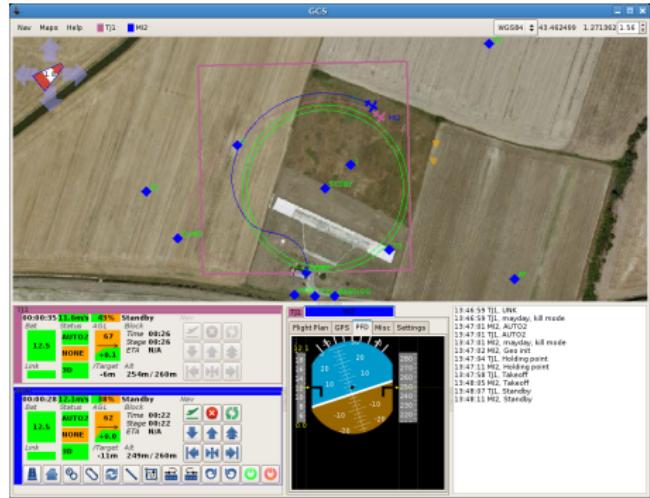
The UGV (Operator GUI)



Operations



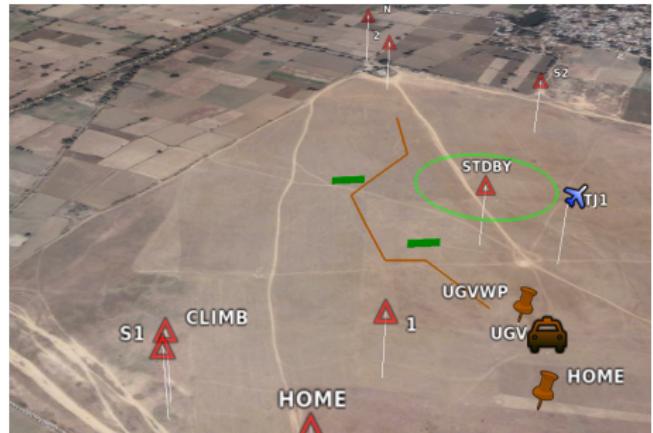
- GCS



Operations



- GCS
- Google Earth editor



Operations



- GCS
- Google Earth editor
- Video





Conclusion



- Two fixed wing vehicles

Conclusion



- Two fixed wing vehicles
- No autonomous rotorcraft



Conclusion



- Two fixed wing vehicles
- No autonomous rotorcraft
- Paparazzi equipped sim-UGV and Commando

Conclusion



- Two fixed wing vehicles
- No autonomous rotorcraft
- Paparazzi equipped sim-UGV and Commando
- One single GCS



Paparazzi: The Free Autopilot



paparazzi.enac.fr

