

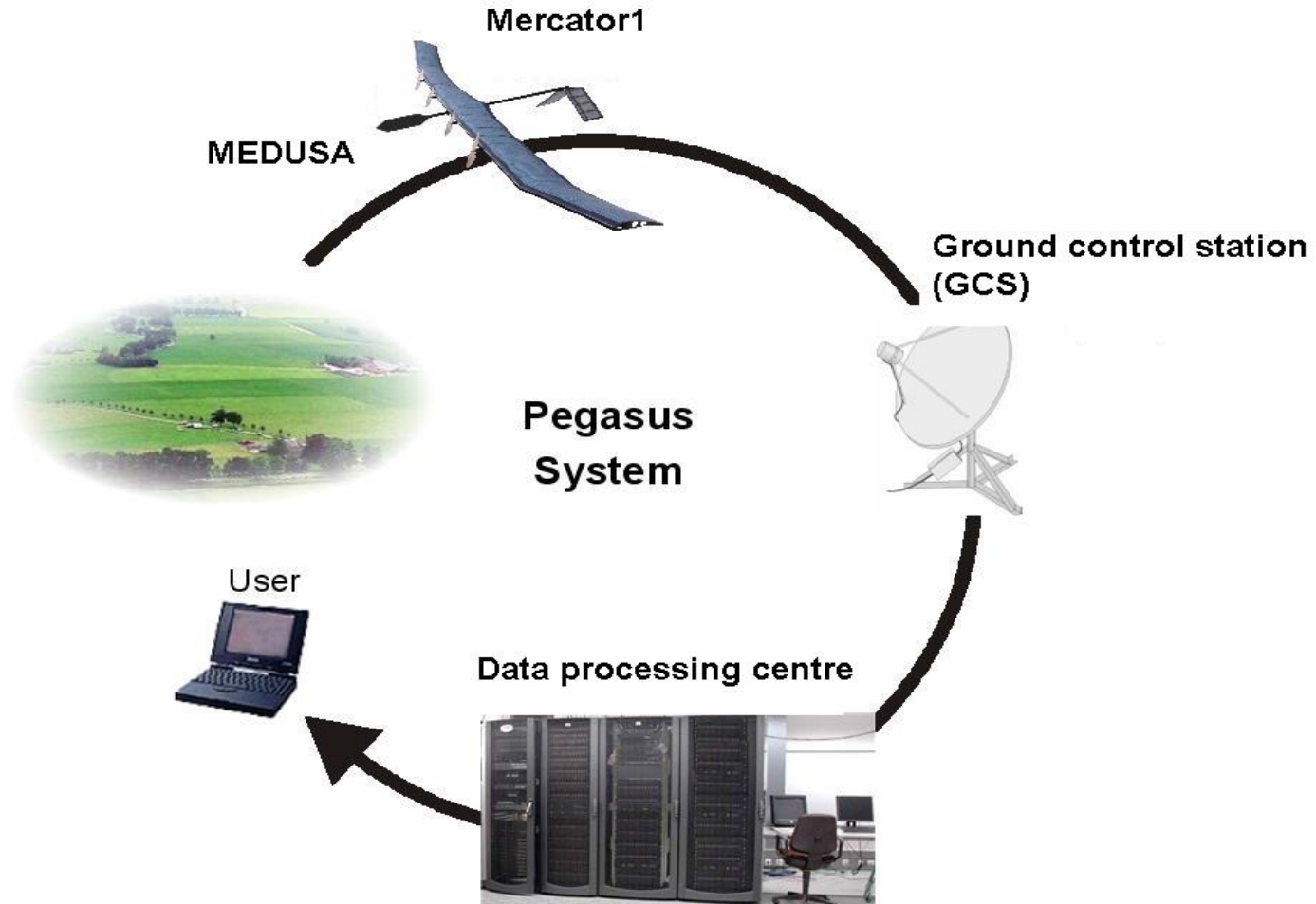
10/10/2011

# Obtaining a permit to fly for a HALE-UAV in Belgium

Jurgen Everaerts

# Mercator is a part of Pegasus

*To provide persistent remote sensing ability on a regional scale*



# Phase one: naive approach

- » Before 2007, no regulation was published
- » Safety case approach: show that the system in flight is as safe as any other airspace user
  - » Statistical, mathematical, physical model
  - » Kinetic energy, cross sections, ...
- » Position reporting
  - » No transponder on board
  - » So: injecting GPS position via another way

# Result: failure

- » Unusual approach
- » Insufficient communication to check that approach was acceptable
- » Reluctance from authorities to “take risks”
- » Technological solutions were not implementable in practise

# On top of that...

- » Regulation established (100+ pages, derived from CS-23 (429 pages))



Kingdom of Belgium  
Federal Public Service Mobility and Transport  
Civil Aviation Authority

**Belgian Certification Specification  
FOR UAV SYSTEMS**

**Certification Specifications  
for  
Normal, Utility, Aerobatic,  
and Commuter Category  
Aeroplanes**

**CS-23**

## 2nd attempt

- » A meeting was set up with all stakeholders
  - » Belgian CAA
  - » ATCC, Belgocontrol, EUROCONTROL HQ and MUAC
  - » Belgian Defense
- » Project was explained, and a way forward discussed
- » Everyone took some ownership in the project, negative attitude changed into positive
- » Mode-S transponder and navigation lights required



IGN, Bruxelles - 2001  
 Mention obligatoire à chaque réutilisation  
 © NGI, Brussel - 2001  
 Verplicht te melden bij ieder hergebruik

# Looking for a site

- » Lots of small airfields evaluated
- » Three selected, and visited in early 2009
- » 2 proposed to other stakeholders

# Proposing an approach

- » 3 flights
  - » Flight 1: 12 h, up to 24 000 ft
  - » Flight 2: 24 h, above 24 500 ft
  - » Flight 3: 72 h, above 40 000 ft during night time

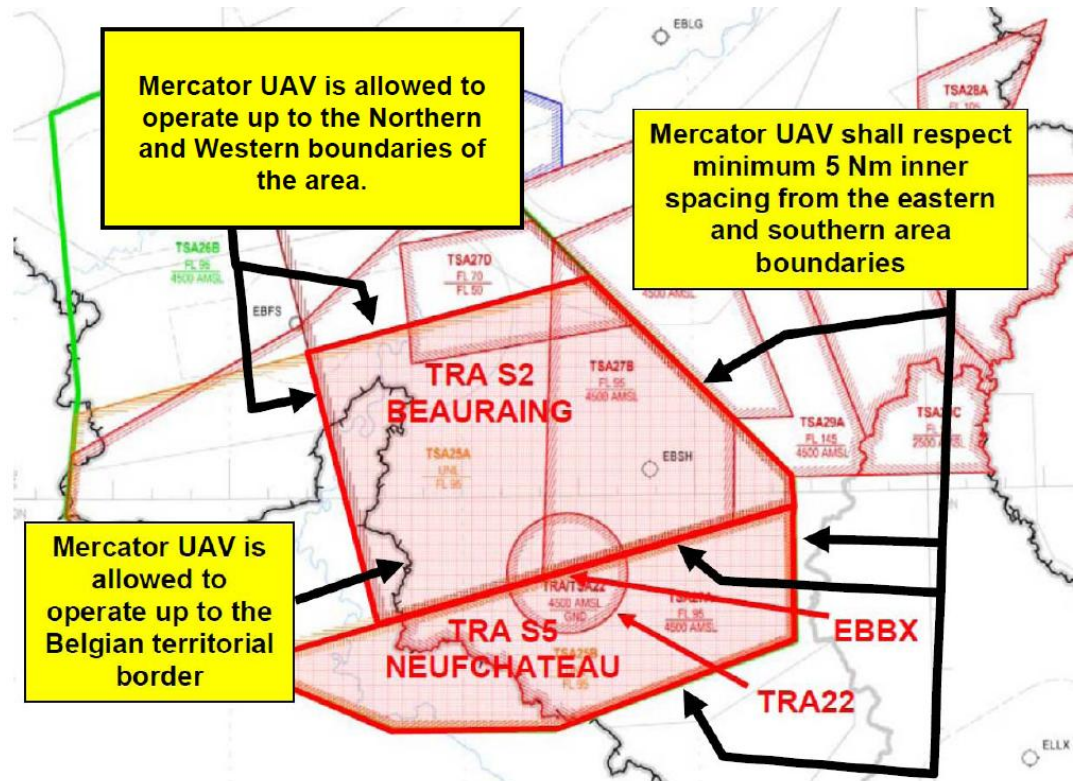
# Site selected, approach confirmed

- » BERTRIX airfield
- » Flight 1: not necessary



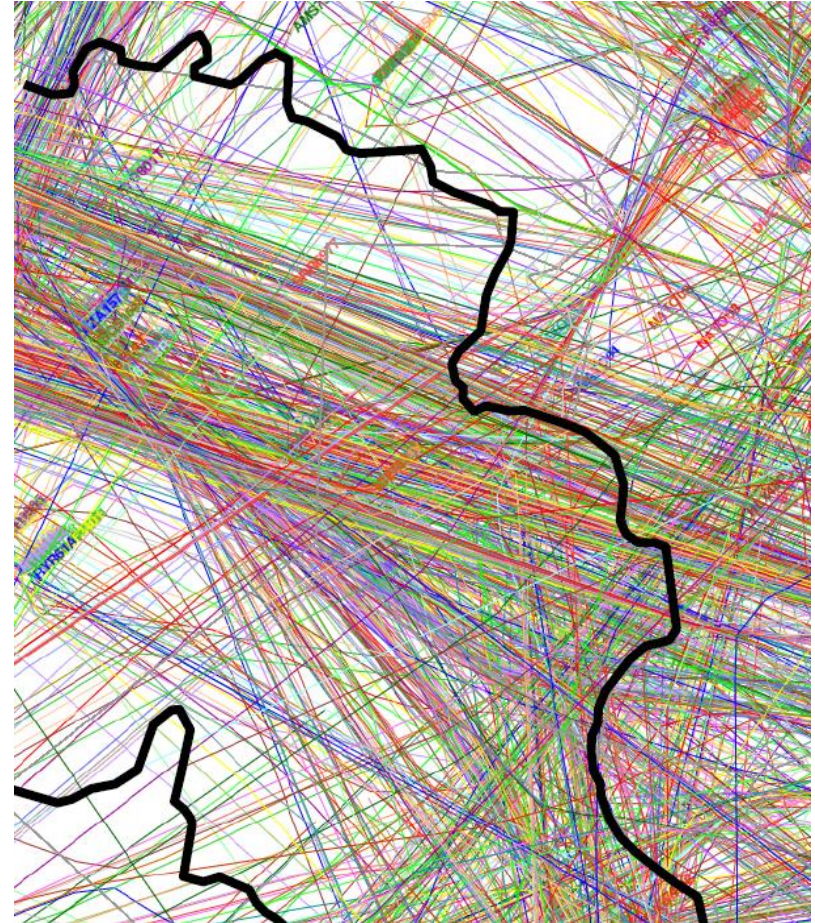
# Site selected, approach confirmed

- » ATM people writing a Temporary Operational Instruction (TOI)
  - » Communication via dedicated landlines, by UAV pilot
  - » Detailed scenario of action leading up to flight



# Site selected, approach confirmed

- » ATM people writing a Temporary Operational Instruction (TOI)
  - » Lateral and vertical box around the aircraft

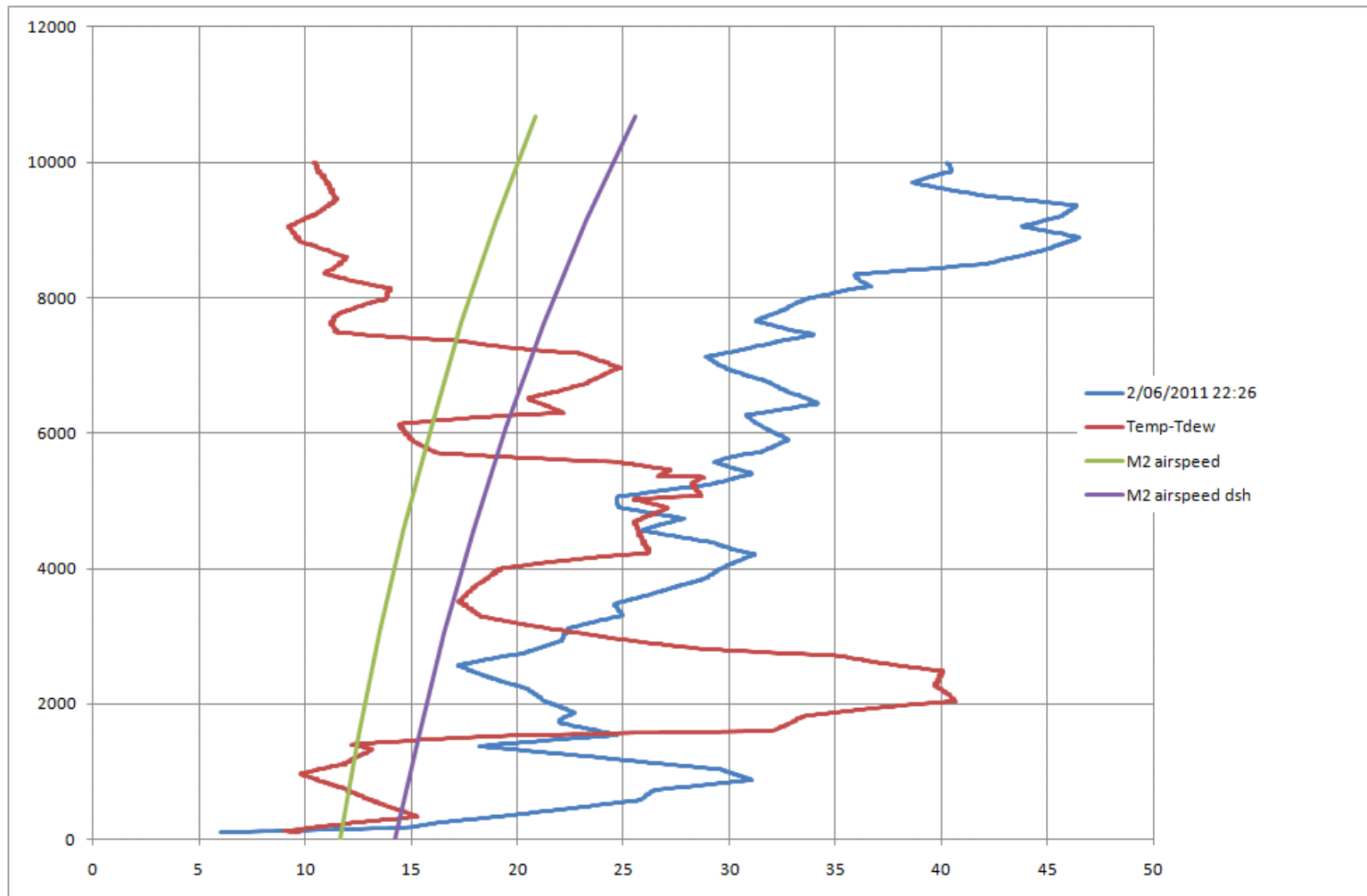




# Standing by October 2010



# Standing by May-June 2011



# Getting ready 27 June



# Getting ready 27 June

