



AMSAT-UK



Radio Communications Foundation

# FUNcube – AMSAT-UK's first satellite



**Graham Shirville G3VZV**

**David Bowman G0MRF**

**Wouter Jan Ubbels PE4WJ**



AMSAT-UK



# FUNcube Objectives

Primary objective:

*“to provide an in-orbit tool for science education outreach and hands-on training through the provision of a telemetry system that is suitable for easy reception using extremely simple hand held VHF equipment connected to the USB port or soundcard of a computer or net/laptop”*

Secondary objective:

*“To provide a linear UHF up and VHF down amateur radio transponder which can be used by radio amateurs worldwide and can be used to demonstrate radio communications to schoolchildren and students of all ages”*

Project funding: Radio Communications Foundation

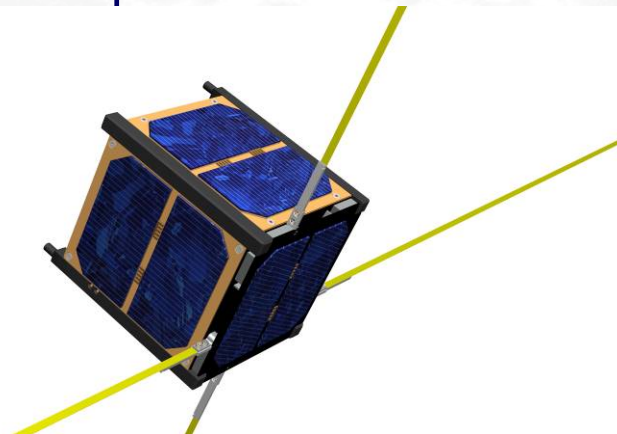


AMSAT-UK



# FUNcube Satellite

- 1-Unit CubeSat
- Off the shelf CubeSat EPS
- Deployable VHF/UHF antenna system (2 dipoles)
- VHF BPSK beacon – possibly similar to SuitSat-2, ESEO
- No OBC, simple command & control board
- Passive Magnetic Attitude Control (a la DO-64)
- Mode UV linear transponder (40kHz, 1W PEP)
- Materials science experiment

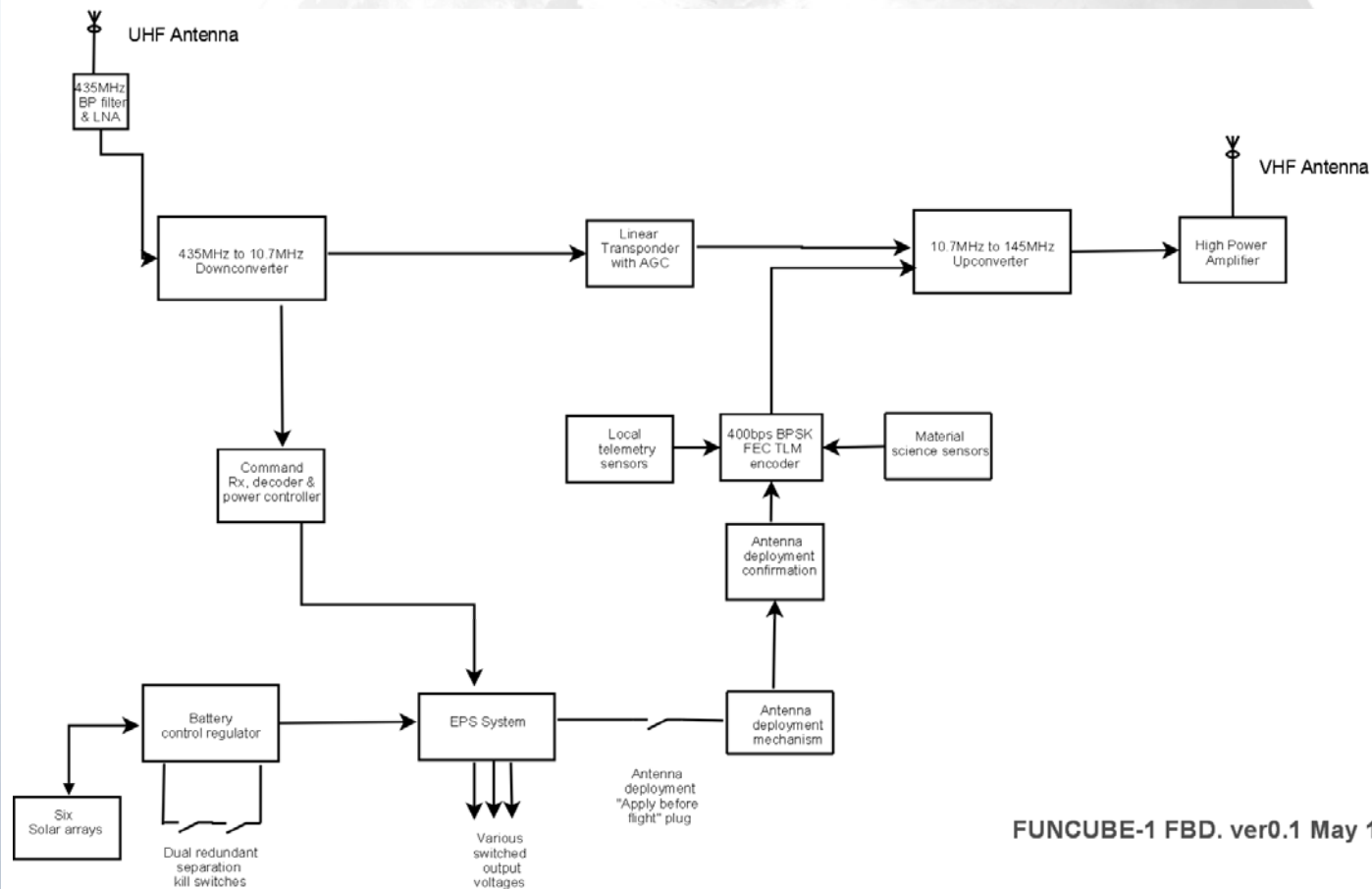




AMSAT-UK



# Block diagram



FUNCUBE-1 FBD. ver0.1 May 15th 2009



AMSAT-UK



# Educational outreach

- In-orbit “counterpart” to GB4FUN - enthusing future engineers & scientists
- STEM subjects
  - EM waves / radio
  - Electronics
  - Physics
  - Orbital mechanics
- Materials science payload
  - Demonstrate loss of heat energy by radiation from two materials with differing surface finishes
  - Reference experiment on ground (“Leslie’s Cube”)





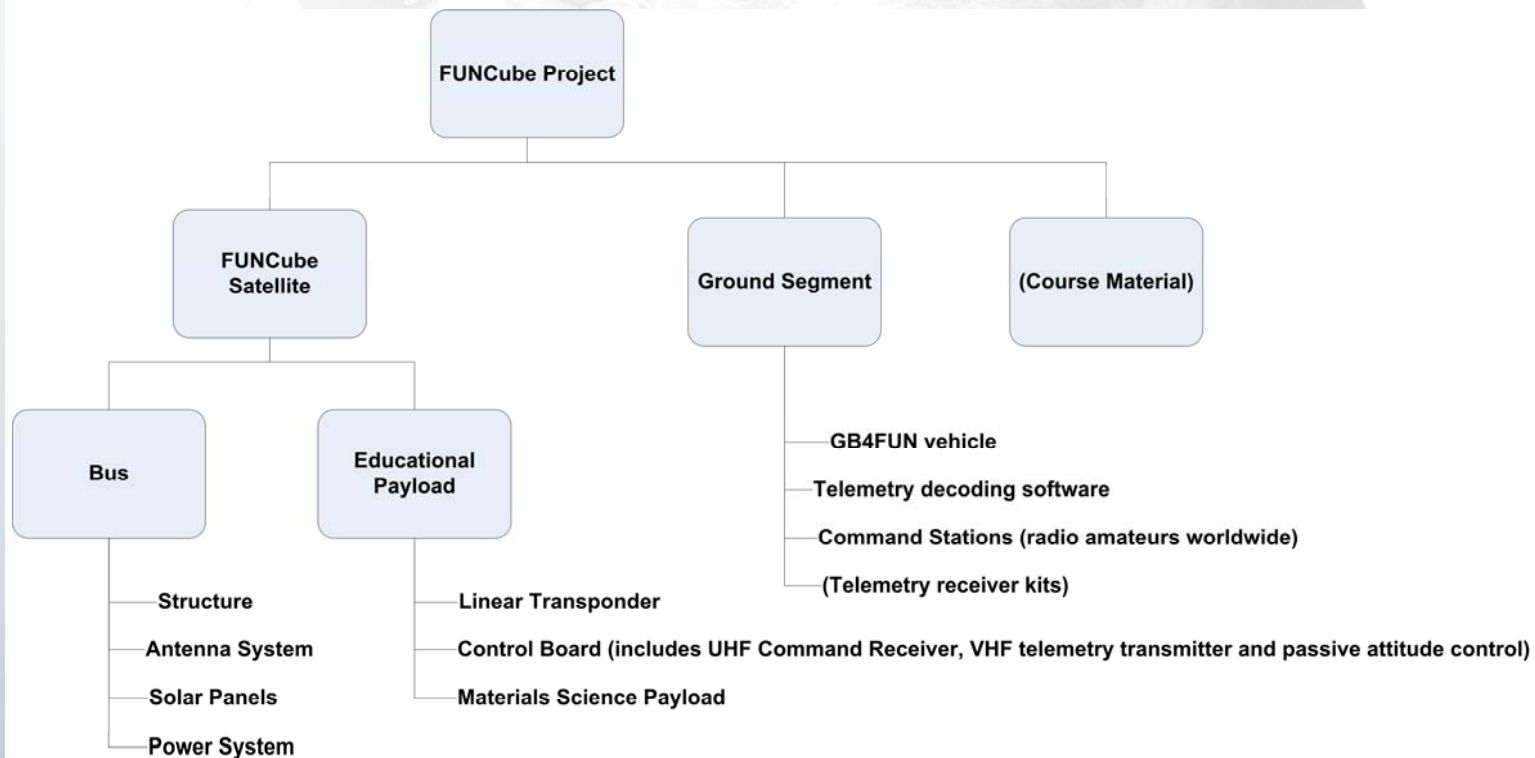


AMSAT-UK



Radio Communications Foundation

# Project overview





AMSAT-UK



Radio Communications Foundation

# Operations

- Command Team of volunteer amateur radio operators
- GB4FUN
- Will be compatible with the GENSO network





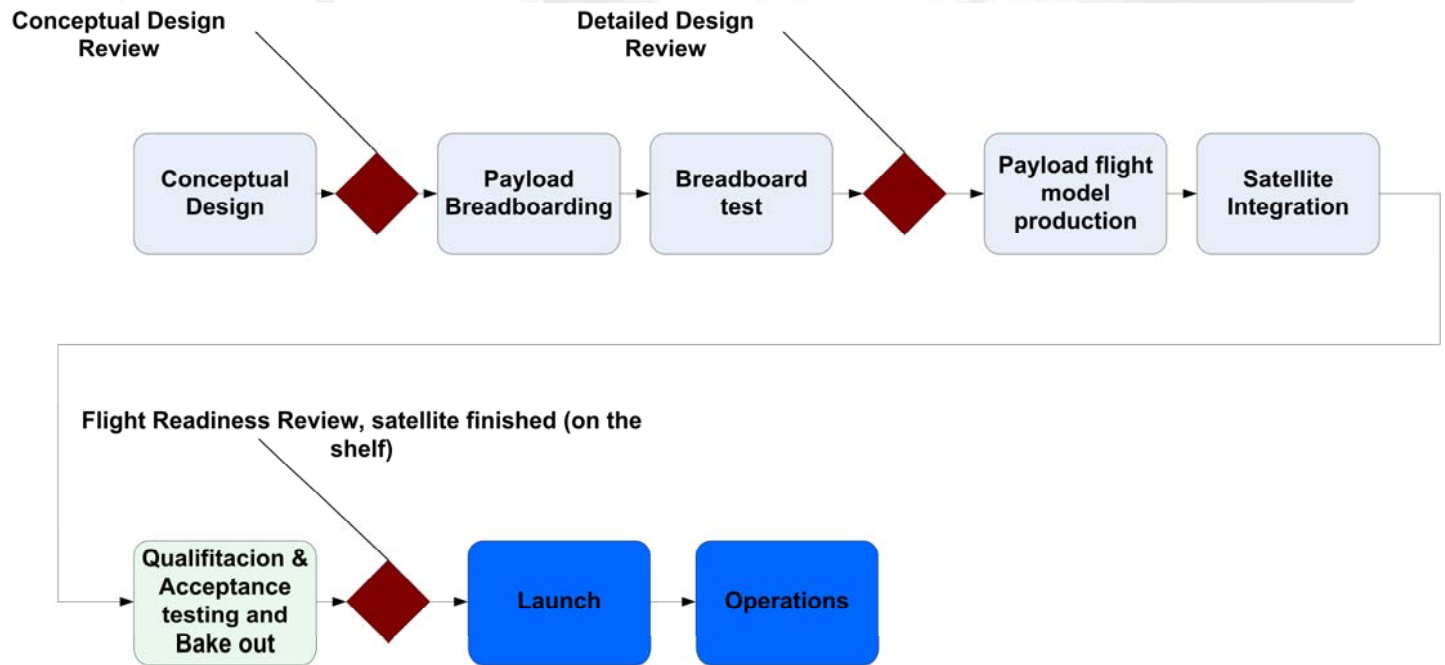
AMSAT-UK



Radio Communications Foundation

# Project organization

- Payload: AMSAT
- Satellite Bus: ISIS
- Qualification & Acceptance Testing: ISIS
- Launch: TBD





AMSAT-UK



# ISIS - Innovative Solutions In Space

- Founded in January 2006
- Spin-off from Delfi-C3 project
- Office in Delft on the Delft University of Technology Campus
- 19 employees



Jeroen Rotteveel  
Managing Director



Abe Bonnema  
Marketing Director



Eddie van Breukelen  
Financial Director



Wouter Jan Ubbels  
Technical Director





AMSAT-UK



Radio Communications Foundation

# Get ready for the launch

- Satellite fully built & tested, waiting on the shelf for launch
- Intended for a piggyback launch to 600-800 km LEO Sun Sync orbit in POD
- Qualification to suit Vega, PSLV, etc etc.
- **Fundraising**



Source: ISRO





AMSAT-UK



ISIS



Radio Communications Foundation

# Possible Timeline

- Gain RCF agreement – done
- Public Announcement – done
- Sign contract with ISIS – this week
- Conceptual design review – Oct 2009
- Detailed design review – April 2010
- Flight readiness review – October 2010
- Launch - ?



AMSAT-UK



# Opportunities for involvement

- Space segment
  - Command decoder design
  - FEC telemetry development
  - Oversight and peer review
- Ground Segment
  - Receiver kit and antenna design
  - Receiver software development
  - Telemetry decoder s/w development
  - Publicity/website management





**AMSAT-UK**



Radio Communications Foundation



# Questions?