REQUIREMENTS AND DESIGN CRITERIA

Design drivers:

- Circular equatorial orbit, 520 km, short life (six months after commissioning and set-up/calibration)
- One experiment running uninterrupted : few operational modes, small telemetry rate, no attitude manoeuvres
- Undemanding resources (250 kg, 110W)
- Suppression of external and internal disturbing accelerations and thermal effects
  - constraints on mass distribution & area-to-mass ratio
  - drag free control, spin control, thermal stability

Design approach:

- Build satellite around experiment → ad-hoc configuration
- Decouple satellite service functions (easy) from experiment (complex)
  - standard satellite functions (OBDH, TT&C, Power, Propulsion, AOCS) easily adapted to PRIMA designs
  - dedicated, highly integrated experiment control (experiment produces its own feedback signals, dedicated processor generates test mass position, drag free & spin rate control commands and drives actuators)
- Design for compatibility with wide range of small launch vehicles → design exercise focused on Pegasus (small payload mass, small fairing, high launch loads)