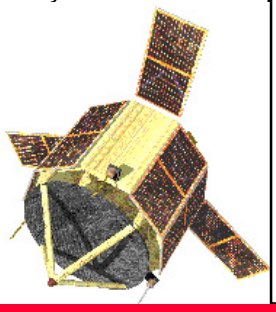
Surrey Lunar & Interplanetary Activities

SURREY SATELLITE TECHNOLOGY LTD

EarthRise Minisatellite

- To demonstrate low cost missions beyond LEO
- 450 kg total (wet) mass
- 20 kg payload to lunar orbit
- Any launch to GTO
- 6-12 months in lunar orbit
- 8 -35 kbps to 2 m ground station
- Total Cost $15 M
- In-house study pre UoSAT-12



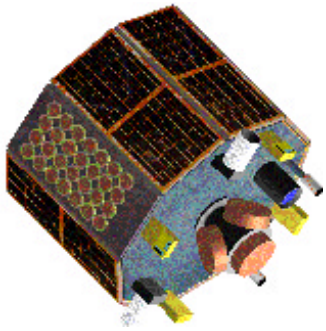
LunarSat Microsatellite

- Education and outreach mission
- 100 kg total (wet) mass
- 2-6 kg payload to lunar orbit
- Ariane V ASAP launch to GTO
- 6 months in lunar orbit
- 0.8-1.7 kbps to 2.4 m stations
- Total Cost $15 M
- Phase A/B Study for ESA 1998-99

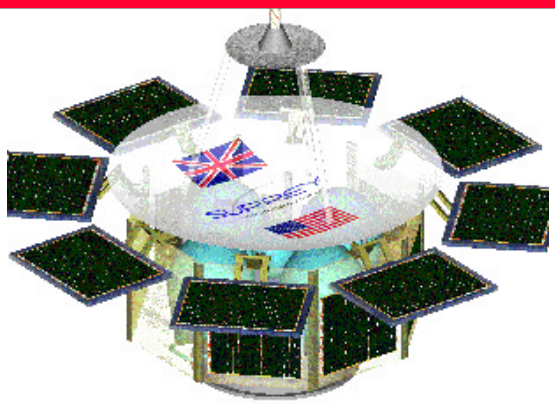
Image courtesy of LunarSat team

Surrey Lunar Minisatellite: MoonShine

- To fly a wide range of payloads to Lunar and NEO targets at low cost
- 400 kg total (wet); 1600 m/s delta-V
- 20 to 70 kg payload mass to lunar orbit (launch dependent)
- Any launch to GTO, Intermediate Orbit, or Direct Injection
- 1 - 6 month transfer; 12 - 24 months in lunar orbit
- 3-axis stabilised, other modes viable; nominal 1 Gbyte data storage
- 10 - 40 kbps to 3.5 m ground station; CCSDS data standard
- Total Cost < $25 M, (several low cost launch opportunities identified)
- Phase B/C planned Autumn 2000; 30% of required capital already raised



Interplanetary Platform



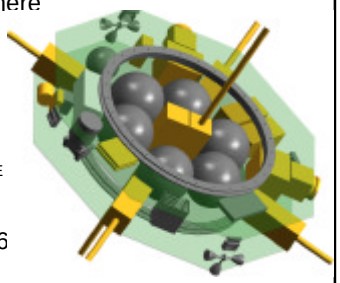
- To fly a wide range of payloads to the planets at low cost
- 570 kg total (wet) mass; 3200 m/s delta-V
- 20 kg payload mass to Mars or Venus orbit
- Athena-2 launch to GTO
- 6-9 month transfer (Venus & Mars); 24 months in orbit
- Spin stabilised, 3-axis momentum bias mode viable
- 8 bps from 380 million km to 7.3 m ground station (1 Mbyte per day)
- Payload data transferred via internet
- Total Cost $30-55 M (launch opportunities identified)

Cluster-Lite

- CLUSTER restoration mission
- 320 kg spacecraft
- 4 spacecraft
- 2 Tsyklon launches
- 65 kg payload
- 45 W for payloads
- Proposed launch for 2001
- Proposal to CLUSTER-II study team

Magnetospheric Multiscale Mission

- To perform systematic measurements of the boundary regions of the magnetosphere
- 310 kg spacecraft
- 5 spacecraft
- Single Delta launch
- Orbit range 1.2 R_E -120 R_E
- > 2 year mission lifetime
- Launch window 2005-2006
- Study for NASA



affordable access to space

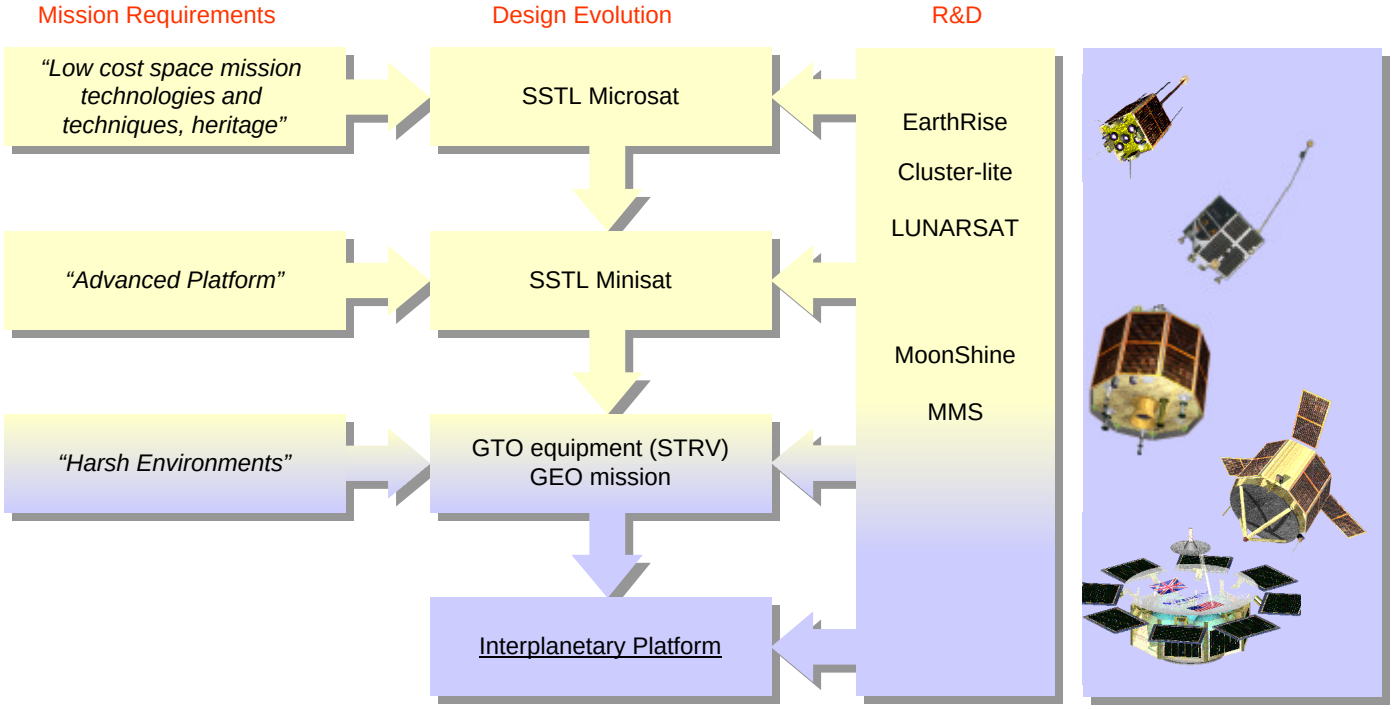
Surrey Lunar & Interplanetary Activities

Are you a PI?

Surrey's low-cost, high performance planetary platforms and world-leading reputation could help put *your* experiment into orbit

Contact: Surrey Space Centre

Evolution of Surrey's Planetary Satellites



Surrey Satellite Heritage	Surrey Lunar & Interplanetary Interests	Contact Us:
• First microsatellite launched in 1981. Since then Surrey have: • launched 18 LEO missions • Flown a variety of payloads for customers from UK, ESA, USAF, France, Singapore... • Earth Observation • Store & Forward Communications • Technology validation • Science • Rapid turn-around missions: 12-18 months	• Lunar Orbiter • Lunar Impactor • Mars Orbiter • Venus Orbiter • Near-Earth Comet Mission • Near Earth Asteroid Mission • Missions to LaGrange Points • Magnetospheric Missions & "Space Weather" • In-orbit debris monitor mission • Open to ideas	**Surrey Space Centre** University of Surrey Guildford, Surrey GU2 5XH United Kingdom Tel: (44) 1483 259278 Fax: (44) 1483 259503 E-mail: sstl@sstl.co.uk www: www.sstl.co.uk

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