



PPARC Kite Club: Science on Low Cost Space Missions

**Lower than Low-Cost
Space Missions**

From Clyde Space Ltd.

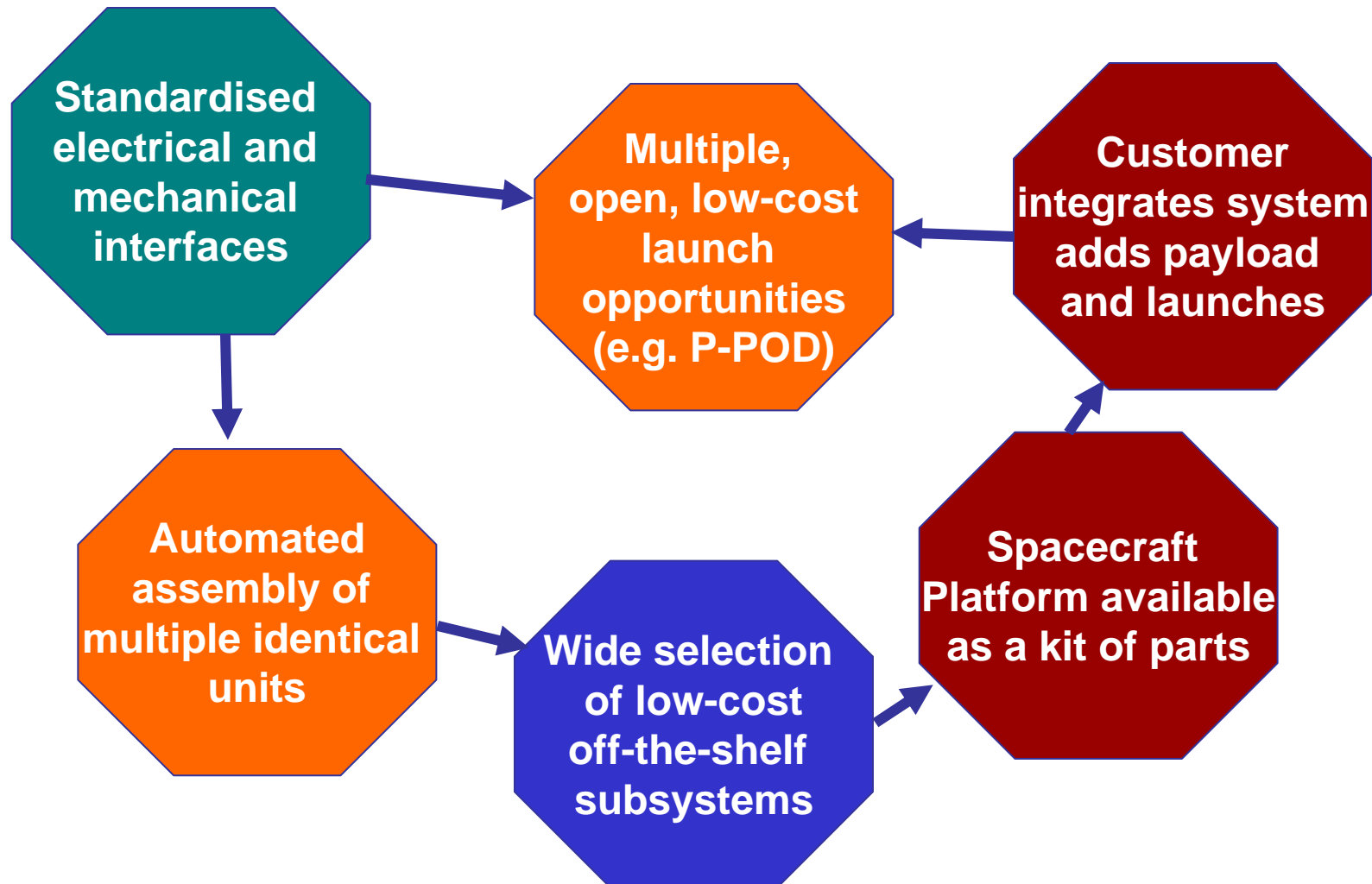
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Want to buy a satellite for the price of a family car?

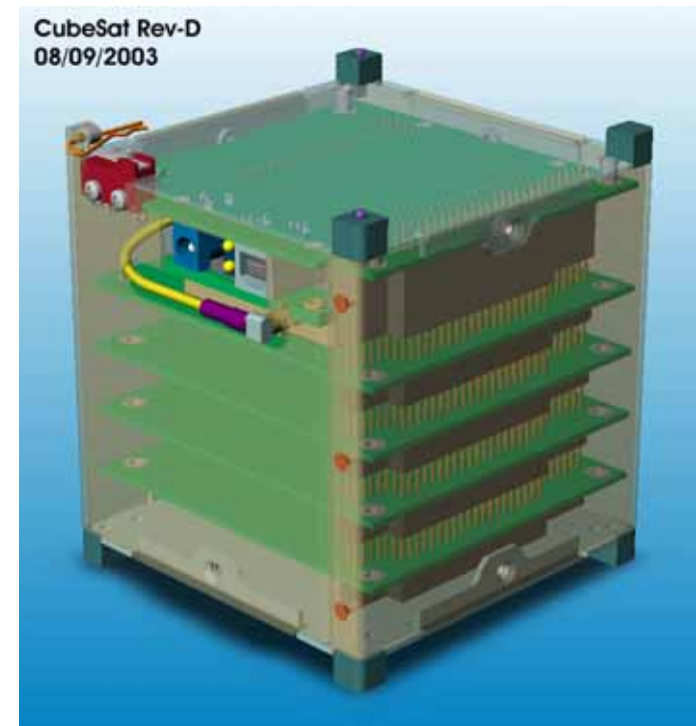
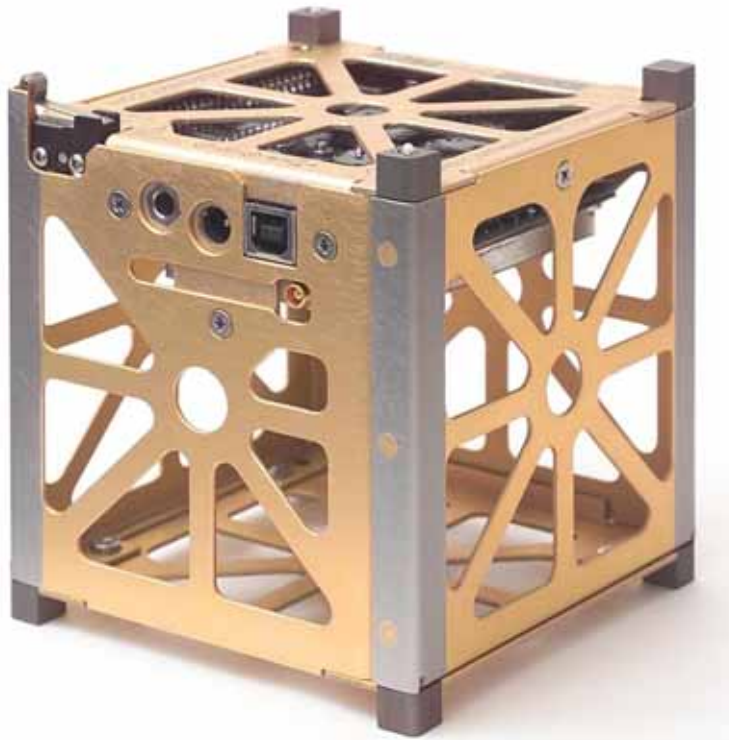


It's not as crazy as it may sound...

Cost Reduction Approach



The CubeSat Kit



The Clyde Space Power System allows battery charge and/or EGSE power from a USB2 interface.

Real Science on a CubeSat

- NASA's CubeSat, GeneSat-1, is a NASA Ames Research Centre mission.
- GeneSat-1 is not an educational mission, it is performing real science.
- The 5-kilogram CubeSat is carrying bacteria inside a miniature laboratory.
- GeneSat was launched on Dec. 16, 2006.
 - John Hines, the GeneSat project manager: "GeneBox is an example of a low-cost spacecraft model that we hope will provide a short turn-around time for scientists, is responsive to their needs and that we feel will contribute to the Vision for Space Exploration."



Conclusions

- The utility value of very small, low-cost spacecraft is increasing.
 - Real science and commercial applications are already being implemented.
- There are two main factors in why CubeSats are so low-cost:
 1. The standard interfaces and availability of existing plug and play subsystems drastically reduces NRE.
 2. The subsystems are mass produced using automated assembly.
- Clyde Space is mass producing CubeSat Power subsystems using automated assembly lines.
- We are using our extensive small satellite experience to ensure reliability isn't compromised.



Who are Clyde Space?

- Small Satellite Power System Specialists.
 - Design and production of power management systems, batteries and solar arrays.
- Pumpkin CubeSat Kit Reseller in the UK.
- Based in Glasgow, Scotland.
- Privately owned.
- 5 staff members.
 - Bringing extensive small satellite mission experience.
- Founded mid 2005.
 - First spin-out from SSTL.

