

Developing the Small Satellite Industry and Enabling Low Cost Entry to Space

Surrey Space Centre, University of Surrey

Meeting Global Challenges

- Surrey Space Centre is a fully integrated mix of academic researchers and a university owned commercial company. Its aim is to underpin the technical development of the small space industry – low costs spacecraft and small satellites – through original technologies, concepts, designs and software.
- The Centre develops new innovative technologies which are exploited by the burgeoning small satellite industry, including the University's highly successful commercial company Surrey Satellite Technology Limited (SSTL) with a global reputation for the design, build and launch of low cost, multi-purpose satellites.

A Multidisciplinary Approach

- A multidisciplinary approach to research underpins the Centre's success. Researchers in geography, economics and business work alongside leading experts in technology, physics, engineering, software and mathematics to develop innovative new approaches.

Research Impact

- The centre pioneered small and affordable satellites for environmental monitoring and security protection. The satellites are used for monitoring river pollution, deforestation, CO2 and for security purposes to monitor forest fires and earthquakes. The Centre has set up a world wide disaster monitoring constellation and club of developing countries.
- Research at the Centre has been exploited commercially through SSTL. The successful partnership between the academic research group and SSTL guarantees that new technologies, as they are developed, can be incorporated into products. The research generates novel ideas for space applications and small satellites and the commercial organisation exploits these techniques into cutting-edge products.
- The research programme provides enhanced capabilities for satellites whilst maintaining a low cost platform using off-the-shelf technologies. This has led to significant growth in the market for small satellites with the emergence of many new users who can afford to enter space. A major market is the "space developing" nations. SSTL's unique ability to combine university R&D, academic and hands-on training with the design, manufacture, test and launch of small satellites has enabled 13 nations to become space-faring.
- Following the success of Surrey Space Centre research and development of small satellites the large space agencies such as NASA and ESA are also now developing small satellite programmes, realising that these technically advanced small satellite systems are highly capable and provide a low cost and short lead time for missions.
- The centre has demonstrated a number of world firsts in small satellite use including the first GPS receiver to work on a microsatellite in space; the fastest position fix in space; and the world's smallest fully functional nanosatellite at only 8.5kg. These advances have increased the capability of satellites and reduced the costs of space missions.

Funding Sources

- The research was funded and developed using QR money and further developed by an EPSRC grant. SSTL is now a company employing over 300 people which by 2009 has generated over £200 million in commercial export contracts.