



// Project Case Study

CONSTAR

A new Mission Planning System
for the management of
satellite constellations

Scalable, responsive and user-friendly, with the
potential for future growth

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We work with
Innovate UK

CATAPULT
Satellite Applications

WHAT IS CONSTAR?

CONSTAR is a Mission Planning System (MPS) product designed to achieve the maximum possible value from the large satellite constellations being launched over the next 10 years.

Designed by Surrey Satellite Technology Ltd (SSTL) in conjunction with Satellite Applications Catapult, CONSTAR utilises groups (constellations) of satellites to provide intelligence for hundreds of applications which will reduce costs and increase efficiency and value. This is particularly relevant to customers dealing with critical scenarios such as disaster management, working in challenging environmental conditions (cloud cover, sand storms), or those with businesses based on rapid imaging tasking and requiring fast download.

CONSTAR allows SSTL to compete in the highly competitive constellation market, taking advantage of the applications and design expertise from the Catapult to create an efficient, user friendly solution to constellation operations and tasking.

WHAT ARE SATELLITE CONSTELLATIONS?

A satellite constellation is a system of small satellites that work together to achieve a single purpose. Constellations are one of the few viable means of providing constant and uninterrupted contact with a specific point on the globe.

As small satellite technology has matured and costs have reduced, constellations made up of 50+ satellites have become increasingly common. This is illustrated through the increase in the number of small satellites launched in recent years, with several hundred forming part of Earth Observation constellations (most notably from Planet, Skybox, BlackSky, and SPIRE).

At the same time, significant improvements in connectivity and infrastructure have reduced the costs of providing services through constellations. Data processing, storage and distribution can now all be achieved through cloud-based platforms, and customers are increasingly able to access their information via mobile devices.

PROJECT OBJECTIVES

CONSTAR has been developed to:

- provide a scalable and responsive system for the management of large satellite constellations
- provide more cost-effective Earth Observation coverage as well as automated reporting and commissioning capabilities that will simplify the commissioning process, reducing costs
- deliver an intuitive and easy to use interface suitable for expert operators and non-expert customers
- create new system efficiencies while simplifying future constellation operations
- combine classic workflows with automation by implementing cutting-edge technologies
- maximise constellation capabilities and the potential for future growth.

HOW WILL CUSTOMERS BENEFIT?

Customers using CONSTAR will benefit from:

- a significant reduction in overheads
- greater value and efficiencies
- tailored and user-friendly applications
- the opportunity to take advantage of capacity sharing schemes alongside other customers
- its scalability and flexibility
- its ability to help reduce and remove long term performance degradation.

“Working on CONSTAR was a fantastic experience for the Catapult, engaging with an innovate organisation and helping develop the way in which we work with our wider SME network. The project also supported our objectives to use technology as a catalyst for innovation, while improving our understanding of the barriers that exist within the satellite constellation market. By helping SSTL produce a technology with a higher chance of uptake, we have in turn helped develop a product that will ultimately generate more revenue for the UK economy.”

Louise Hetherton, Project Manager
Satellite Applications Catapult

“The Constar project was very successful for SSTL. It pushed us to work in new ways, greatly benefitting from the experience of the Satellite Applications Catapult design team and the guidance from the Innovate UK team.

By adopting new techniques and technologies we have achieved a step change in our Planning system capabilities which will reduce operational costs for our customers and lead to increased value being returned from our EO spacecraft.”

Claudio Iacopino, Mission Planning Expert
Surrey Satellite Technology Ltd

SSTL are the world's leading small satellite manufacturer and pioneers of the use of new technologies on satellite products and services.

Visit www.sstl.co.uk, call 01235 567999 or email info@catapult.org.uk for more information.

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