Satellite remote sensing, communications, and navigation systems enable real-time access to valuable information necessary to support science and Department of Defense operations.

Because small satellites are being developed faster and for less money than their larger counterparts, the demand for small satellite technologies, including satellite command and control software, continues to increase.

To help fill this need, the Space Dynamics Laboratory (SDL) has developed satellite command and control software that includes a suite of operations tools and individual applications that run within a common web framework. The software includes a satellite planner, autonomous operations, data management and processing, alert system, and facility monitor. The extensible design enables users to use the software development kit to write custom plugins for mission-specific needs.

FEATURES

- Rapid vehicle integration
- Extensible framework for mission-specific requirements
- User-friendly interface
- Autonomous control enabling lights-out operations
- External interface for mission partners, including vehicle task requests and data dissemination
- Vehicle scheduling and planning
- Integration with third-party applications to support vehicle simulation
- Ability to post-process telemetry and payload data
- Modern web architecture supporting cloud deployment
- Ability to integrate with existing toolsets
- Integrated alert system able to work within various environments
- Supports message-based architecture using the NASA GMSEC standard
- Non-proprietary solution, free for Government use
- Compatible with Linux and Windows operating systems
SDL’s command and control software is designed to provide an extensible, easy-to-use solution for small satellites. It is based on a modern technology stack (C#, Angular) as a web application with the objective of solving the following issues:

- Long and difficult mission integration times
- Difficult (or no) lights-out operations
- Expensive solutions designed for larger systems

SDL’s command and control software works to resolve these challenges by providing a solution with Government-use rights that is built on an extensible modern architecture. SDL’s software is designed to aggregate individual mission applications into a cohesive solution for mission operations. It does this by enabling different mission functions (i.e., planning and autonomy) to be individual applications run from the same application framework in a seamless user experience.