ControlPlan™

Optimized Scheduling and Route Planning for UAS Systems

Princeton Satellite Systems ControlPlan solves complex, multi-constraint problems to support the decision-maker

ControlPlan is user-centric decision support software that produces viable courses of action within complex decision spaces. The software uses a flexible framework with optimization libraries to leverage the right mathematical tool for each problem.

UAV Planning

The UAV fleet is growing with a diverse set of platforms that bring a wide range of capabilities, mission benefits and operational constraints.

ControlPlan helps the planner to determine which combination of UAS platforms and payloads best support the mission. It frees the operator from the complex set of systems, capabilities and limitations to maintain a laser-focus on the mission.
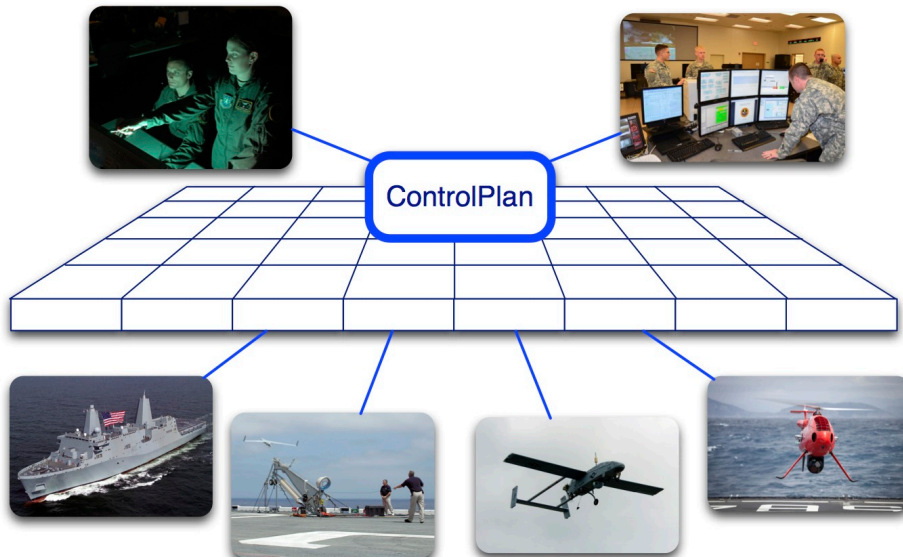
Comprehensive Solution

ControlPlan provides a complete solution to UAS planning challenges:

- Optimized scheduling of diverse UAS platforms and payloads to support multiple phased missions
- Optimal route development for individual UAV trajectories to best support each mission
- User-centric interface that provides an integrated setting for situation awareness, mission inputs, plan development and trade-off analysis
- Planning framework in a client-server, service oriented architecture to support distributed collaboration

Capabilities

- Rapidly develop user-defined courses of action in complex decision space.

- Optimally plans ground contacts for any satellite network and distributed ground system

- Supports collaborative, networked planning

- Service oriented client / server architecture

Image courtesy of USAF

Unique Features

- Flexible problem structure enables operators to specify multiple UAV models, payloads, and mission parameters.

- Robust mixed integer programming methods enable optimal allocation and scheduling of distributed UAS resources.

- Efficient trajectory optimization methods are used to rapidly compute alternative UAV routes that maximize different aspects of mission performance.

What is ControlPlan?

The ControlPlan planning framework supports tradeoff analyses of multiple courses of action. The design provides users the ability to develop and store a diverse set of plans to accommodate a wide range of scenarios. Within each scenario, courses of action that meet system and mission constraints are developed using user-defined, mission-specific criteria.

Tradeoff analysis between plans is performed through detailed displays that provide a time-phased representation and user-defined charts, tables and graphs comparing the plans.

ControlPlan's efficient computational approach allows the user to receive immediate feedback to plan modifications.

User in control

ControlPlan has the human planner at the heart of its design. It allows the user to apply the most advanced mathematical tools in creating a set of optimal plans while freeing them to impart a mission focus to the plan.

Origin of ControlPlan

ControlPlan was originally developed as a planning tool for Navy's Mobile User Objective System. Called Satellite Planner for Execution and Reconfiguration (SPEAR), it optimally plans mission options for this satellite system against a variety of space-borne and ground based threats within orbit, satellite fuel and payload mission constraints.

Princeton Satellite Systems

We are an innovative engineering firm pushing the state-of-the-art in Aerospace, Energy and Control. Since the company was founded in 1992 we have been an integral part of the development of satellite control systems such as GPS IIR, Telstar 4, Cakrawarta-1 and Sweden's Prisma. We sell commercial software and perform research for the Air Force and the Navy. We have received a wide range of patents from Satellite Control to Nuclear Fusion.

Our staff provides user-focused engineering talent in developing and applying new and innovative solutions to any set of complex problems.

For more information about Princeton Satellite Systems, please visit us on the Web at: www.psatellite.com or contact our ControlPlan development lead, Dr. Joseph Mueller at 763-639-1553, jmueller@psatellite.com
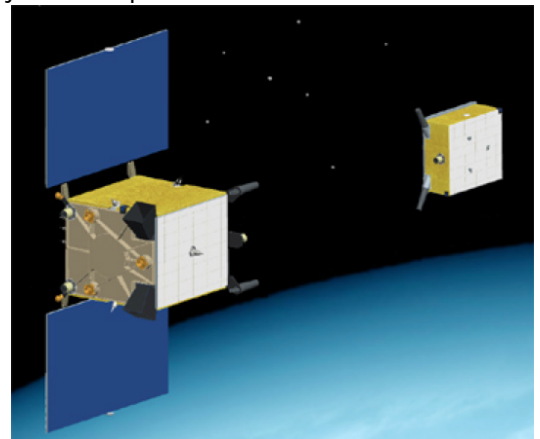
The Prisma mission was the first demonstration of sustained autonomous formation flying. PSS designed Prisma's safe orbit guidance algorithms.

ControlPlan

- User-Centric

- Mission Focused

- Proven capability developed under Navy's Program Executive Office Space Systems

- Optimization engine solves a wide range of problems

- Client-server architecture for distributed use and collaborative planning

Princeton Satellite Systems has 20+ years of experience working with Industry, Government and the Military providing best of class solutions.

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