ControlPlan™

for Power Systems

Smart-grid configuration, contingency, and sensor optimizing planner.

Princeton Satellite Systems' ControlPlan™ solves complex, multi-constraint problems to support the grid operator.

Capabilities

- Rapidly develop optimal courses of action in a complex decision space

- Optimally plan load leveling and phase regularization in response to user-defined scenarios, subject to constraints.

- Each system component can be modeled in detail

- Supports collaborative, networked planning

- Service oriented client / server architecture

ControlPlan™ is user-centric, decision support software that produces optimized courses of action within complex decision spaces. The user defines detailed models of the system, a "cost" function, and sets any number of weighted constraints.   The software selects an optimization tool from its library, and produces an optimized set of adjustments to the control variables: a plan or course of action. The operator can compare various options for planning and response purposes.

What It Does

The ControlPlan framework supports tradeoff analyses of multiple courses of action. It 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 constraints are developed using user-defined, goal-specific criteria.

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

The efficient computational approach of ControlPlan provides the user with immediate feedback to plan modifications.

The Operator Is In Control

ControlPlan™ has the planner at the heart of its design. It allows the power system operator 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.

Smart-Grid Resource Allocation

The power system operator makes decisions based on input from an increasing number of data sources. ControlPlan™ allows an operator to study various situations ... power requests, weather-related events ... and the software will generate the optimal plan. This can be done in advance of hypothetical events in order to develop contingency plans, or it can be done at the time of the event.

ControlPlan™ is not a real-time power control system. It will not implement the plan; that is up to the operator. However, this separation of functionality means that ControlPlan is a drop-in complement to existing control systems. It enhances functionality; it does not replace it.

ControlPlan helps the planner/operator to determine which set of choices best supports the long-term goals and short-term situation. It frees the operator being overwhelmed by the complex set of systems, capabilities and limitations to maintain a laser-focus on the changing situation.

Implementing ControlPlan

ControlPlan is an enterprise software product. The core mathematical engine was developed to provide optimized decision support to the US military.

PSS engineers work with you to implement a customization layer which include time-dependent models of any system component. We will provide interfaces between hardware sensors and input from other sites to provide situational awareness.

We work with you to develop a custom client with graphical user interface tailored to meet the visual expectations of the experienced operator. Weighted constraints and situation data is input through the GUI, and the results presented via custom charts, graphs, and maps. If desired, a multiuser collaborative environment can be developed.
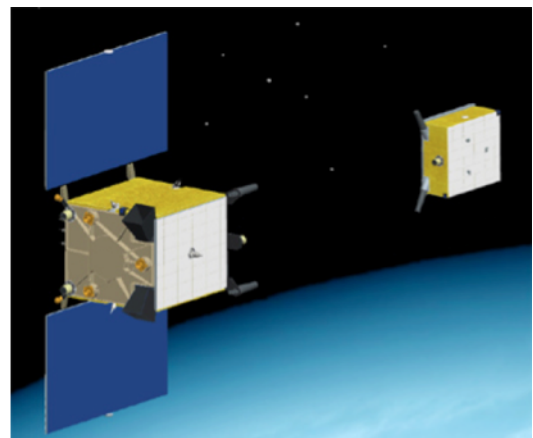
Origin of ControlPlan™

ControlPlan™ was originally developed as planning tool for the US Navy for use in managing a constellation of communications satellites. Called Satellite Planner for Execution and Reconfiguration (SPEAR), it optimally planned mission options for this satellite system against a variety of space-borne and ground based threats within orbit, intentional and unintentional radio interference, satellite fuel, and other various 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 1992 we have been an integral part of the development of many satellite control systems. We've leveraged our experience in space-based power systems to develop a solar charging station for electric vehicles and a solar backup power system for home and industrial use. We are working with the Princeton Plasma Physics Lab on the development of a nuclear fusion based rocket engine. We market a number of software products related to control systems including a MATLAB Spacecraft Control Toolbox, and we have produced numerous software products for the Air Force and the Navy. We have received a wide range of patents from satellite control to nuclear fusion spacecraft propulsion.

Our world-class 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 Dr. Gary Pajer at 609 275-9606, gpajer@psatellite.com

The Prisma mission was the first demonstration of sustained autonomous formation flying. PSS designed Prisma's safe orbit guidance algorithms.