PS Solver

6DOF Dynamics

Trajectory Evaluation

Aerodynamic Databases

Vehicle Models

C-REST Engine Model

Trajectory Approximation

Vehicle

Aerodynamics

Propulsion

Properties

Thrust

Fuel Flow

Aerodynamic

Coefficients

Payload Mass

Cost

Trajectory

Parameters

Constraints

Conical Shock Model

Engine Inlet

Conditions

Inputs

Atmospheric Data

Path constraints

Initial and end constraints

Initial guess

Third Stage Unpowered Ascent Simulation

Motion

Derivatives

Optimal Solution

Updated Guess

Vehicle Dynamics

Aerodynamics

Constraint Violations

Cost

Trajectory Guess

External Modules

IPOPT

GPOPS-2