



**SElds**  
Electronics, Defense, & Systems

# Solution Center

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***Electronics Manufacturing Services - Systems Design Services - Repair and Reverse Engineering  
Embedded Computers - Systems Engineering, Integration, and Simulation - Program Support***

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## Frequently Asked Questions

### How does the Solution Center work?

As a member of the Solution Center, you gain multi-industry expertise dedicated to your product needs, you have a state-of-the-art production facility available to build your product, you reduce your product development costs, and you gain real speed to market. Here is a recent example.

- ✓ The problem: A telescope manufacturer wanted to make available a computer controlled camera focusing unit for his line of high end telescopes to compete with his biggest competitor. The focuser needed to be precise, be able to be controlled locally (not connected to a computer) and be able to controlled from a PC USB port.
- ✓ The solution: The telescope manufacturer's engineers designed the mechanics of the focuser unit which is what they were best at. Working in collaboration with the Solution Center engineers, a solids design was completed so that an electronics board could be designed to fit the mechanical package on the first try. The Solution Center engineers created an electronics hardware design consisted of a two digit numeric display, two control push buttons, a stepper motor driver, two optical interrupters, and a precision encoder. From the embedded software library they selected: switch input and debouncing, configurable timers for delays and auto-execution, 7 segment LCD / LED display control with printf interface, two point sensor calibration, EEPROM in Flash emulation, precision optical interrupter position control, hardware state machine emulation, range input, conversion, and scaling, digital low pass filtering, stepper motor acceleration, speed and position control (linear), USB (Universal Serial Bus) connectivity, quadrature encoder input and fault detection, and RTOS (Real time operating system). Some customization of the display and specialized algorithms was added to the embedded software and the unit was ready for testing.
- ✓ The result (non-expedited): The first prototypes were available for testing within 45 days and production started 3 months after the start of the project.