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SMA Program Planning & Control (PP&C) and Engineering Support to Parker Aerospace

Bombardier, Inc., awarded Parker Aerospace a ten-year, $3.5 billion contract to supply flight control systems for Bombardier CSeries aircraft. Concurrently, Parker won addition programs totaling over $16.5 billion. With this volume of work and the challenge of designing and producing a complex state-of-the-art, software controlled flight control system, Parker found its capacity and systems strained.

The impact of this business volume on Parker had the potential to push the Bombardier CSeries Safety of Flight Test (SOFT) date out more than six months. Realizing this slip would result in Bombardier missing its market commitments, resulting in significant financial consequences for Bombardier and Parker. To address the issue, Bombardier conducted a review of the Parker Integrated Master Schedule (IMS) and Project Management Systems, and found them lacking. A key gap identified during the review was the quality of the IMS. To help Parker address their management system challenges, Bombardier engaged the largest global strategy consulting firm. This firm conducted an assessment and recommended a complete overhaul of the Parker management system. Parker realized this would take 24 to 36 months to implement, further distracting the program team, and would not achieve the goal of getting the program under control.

To take control of the problem, Parker conducted a search for a project management consulting firm to assist. The focus of the search was to identify a partner who had demonstrated experience rapidly implementing the near-term controls they needed. Parker realized they had a small window of time to gain the insights into program performance required to make relevant course corrections, and manage the effort. Through this search, Parker identified SMA as a potential partner.

During the week between Christmas and New Year, Parker contacted and met with SMA to identify their needs. With a one-day turnaround, SMA provided a plan and an approach. Impressed with the responsiveness, Parker engaged SMA for a two-week trial to accomplish the first step in the SMA plan: build Tier 1 and Tier 2 schedules to demonstrate to Bombardier that obtaining an on-time SOFT was still an achievable goal. SMA deployed a cross-functional team of engineers and program planners and delivered on this objective.

With the Tier 1 and Tier 2 schedules in place, Parker engaged SMA to provide the program management support required to implement a detailed IMS and establish a Program Management Office (PMO) for Parker. While the PMO team began work on the design and implementation of the Parker PMO, SMA planners engaged the Control Account Managers (CAMs), Program Manager, and Bombardier to develop a fully resource loaded IMS for program that met the February SOFT date. The result of this effort was an IMS that the entire program team acknowledged as “their schedule.”

Another outcome of the IMS development effort was the realization that Parker needed additional engineering support to meet the objectives of the fly-by-wire program and other contracts. Given the success that SMA had demonstrated to date, Parker looked to SMA to support staffing the PMO.

SMA and Parker teamed over the past six years to mature the capabilities of the Parker PMO. Today, Parker has an organic world-class capability. In 2016, Parker received the nomination from the Project Management Institute (PMI) for PMO of the Year.

Background on Parker Aerospace

Parker Aerospace is an operating segment of Parker Hannifin Corporation. Parker Aerospace designs, builds, and supports systems and components for virtually every aircraft flying today. With extensive engineering expertise in motion and control, market-leading breadth of product, and unequaled global distribution, Parker provides innovative components and complete systems to customers worldwide. Based in Irvine, California, its product lines include flight control actuation systems and components, thrust-reverser actuation systems, electrohydraulic servovalves, utility hydraulic systems and components, DC motor pumps, fuel pumps, lubrication and scavenge pumps, fuel measurement and management systems, cockpit instrumentation, flight inspection systems, pneumatic subsystems and components, fluid metering delivery and atomization devices, wheels and brakes, and fluid conveyance products such as hoses, tubes, disconnects, and fittings.

Background on Bombardier

A world-leading manufacturer of innovative transportation solutions, from commercial aircraft and business jets to rail transportation equipment, systems and services, Bombardier, Inc. is a global corporation headquartered in Canada.

Fly-by-Wire System

Fly-by-wire replaces the conventional hydro-mechanical flight control system that uses a series of pulleys and/or rods that directly control flight surfaces and provides easier installation and increased functionality. With fly-by-wire, pilot inputs are interpreted by sophisticated on-board computers to ensure that the signals being sent to the control surfaces optimize the aircraft's performance.

This system represents Parker's first role as a commercial system integrator. Parker is responsible for the complete design development and production of the Fly-By-Wire System. To support the integration and test of the system, Parker has developed a hardware-in-the-loop test facility that provides complete simulation of the system with the implementation of one component or to the entire system for test and verification. As a software controlled system, the test facility provides a complete environment to verify the quality of the software and the performance of each component under extreme environmental conditions.

CSeries Family of Aircraft

The five-abreast CSeries aircraft—launched on 13 July 2008—are specifically designed to meet the growing needs of the 100- to 149-seat commercial aircraft market category, estimated by Bombardier Aerospace at 6,300 aircraft representing more than $250 billion US revenue over the next 20 years. Bombardier expects to be able to capture up to half of this market.