Evaluation of an Embedded Signal Processing System for a Generic Air Traffic Processor

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Abstract

The utilization of Open Architecture Commercial-Off-The Shelf (COTS) products for embedded signal processing is a milestone in the modernization of legacy DSP systems. Reusable and scalable COTS systems facilitate an elegant and optimal system refresh. This paper examines how Lockheed Martin, Indra Sistemas, and CSP, Inc. designed, built, integrated, and tested a COTS-based high-performance embedded processor for a fielded legacy fire control system.

Lockheed Martin MS2 was the system design architect for the Generic Air Traffic Processor (GATP), responsible for defining the technical requirements of the program. Indra Sistemas was responsible for implementing the functionality of the embedded Track Processor in industry standard C++, VSIPL, and MPI. CSP, Inc. provided hardware, software, and training.

With the use of a general purpose processor network, Lockheed Martin established a new baseline configuration for the GATP and leveraged the technical and economic benefits of COTS. The new embedded processor architecture addresses production cost, Diminishing Material Supply (DMS) issues, and facilitates the enhancement and modification of system operations without the need for major redesign.

The GATP refresh demonstrates that an Open Architecture COTS-based embedded processing solution employing middleware standards is an alternative choice for deployment.