Paper ID: 14477
oral

EARTH OBSERVATION SYMPOSIUM (B1)
Earth Observation Data Management Systems (4)

Author: Mr. Giovanni D'Aliesio
MDA Corporation, Canada

MDA'S EARTH OBSERVATION DATA MANAGEMENT SYSTEMS

Abstract

With the ever increasing need for high performance processing, high capacity and high performance mass memory along with a variety of data acquisition and control requirements in space, MDA's line of Earth Observation Data Management Systems line of products are enabling compact and highly integrated solutions for EO applications. From processor boards and data storage units to data acquisition and mechanism control electronics, this paper will overview a set of MDA's space qualified electronic products targeted towards earth observation payloads.

The ESP750 enhanced space processor board is a high performance, radiation tolerant COTS single board computer offered in a compact 3U form factor. The card is built around the IBM PowerPC 750FX processor operating at up to 700 MHz and includes Level 1 (L1) and Level 2 (L2) cache memory, on-board SDRAM, EEPROM, Built-In Test (BIT), a secure digital watchdog timer and a compliment of General Purpose I/O (GPIO), interrupt and timer functions.

The Data Storage Unit (DSU) is being developed to provide earth observation satellites with cutting edge digital data storage technology for spaceflight. The DSU is a high speed mass memory used for storage and playback of data and can operate on multiple files concurrently. It contains high density non-volatile flash technology, a Leon3 fault tolerant processor, advanced FPGA technology and all the interface, control and memory functions required for operation in a compact, radiation tolerant and low power design. The DSU has the potential to perform certain data processing on-board, offers scalable storage capacity, and contains high reliability features, making it an ideal mass storage solution for next generation earth observation satellites.

MDA's series of data acquisition electronics provide a variety of custom interfaces to acquire a multitude of signal types. Combined with command and control functionality, overall instrument or payload management can be achieved in a compact and integrated solution.

MDA's long heritage in robotics has created an expertise in motor drive electronics for space applications. As a result, MDA's line of APMEs and MDEs can provide a low cost and compact off-the-shelf solution for antenna pointing, deployment or motor/mechanism control for instruments.

In conclusion, MDA's series of EO Data Management Systems line of products can be combined in order to achieve a highly integrated, cost effective, low mass/power solution for EO missions.