

ADI DSP Third Party Collaborative

DUNE

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Reference:

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Target Market:

Defense, industrial, applied
research

EXPERTISE:

Design and development of HW/SW real-time systems (FPGA, single CPU; multi-DSP boards for parallel processing).

Radar processing by ADSPTS201S on Bittware boards (8 DSP for each board and several boards are used for each radar).

Radar and sonar DSP processing with SHARC DSP by using commercial boards or in-house designed boards.



Rome, March 3th 2016

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The company is specialized in real time Digital Signal Processing (DSP), with either single CPU boards or CPU cluster boards operating in parallel: development of original algorithms and implementation of real time algorithms software also supplied by customers.

The company is active in the whole project production cycle, from architectural design to development, up to the integration phase and final testing.

Established in 1980, DUNE counts today fifteen professional staff members.

The company has obtained in 2002 the ISO 9001 certification for software development, supply and maintenance, in 2010 the ISO 9001 certification for hardware development and in 2004 it has been qualified as Research Laboratory by MIUR* (The Italian Ministry for University, Education and Research).

Dune has developed over the years a number of processors for sonar and radar using SHARC and TigerSHARC.

Application areas

- Digital Communication
- Real Time Software Implementation on multiprocessor parallel boards
- Industrial Control
- Real Time Hardware Simulation
- Remote Sensing Environmental Monitoring, with microwave electroacoustic and infrared sensors
- Image Processing for artificial vision and robotic guidance
- Localization sensors for indoor

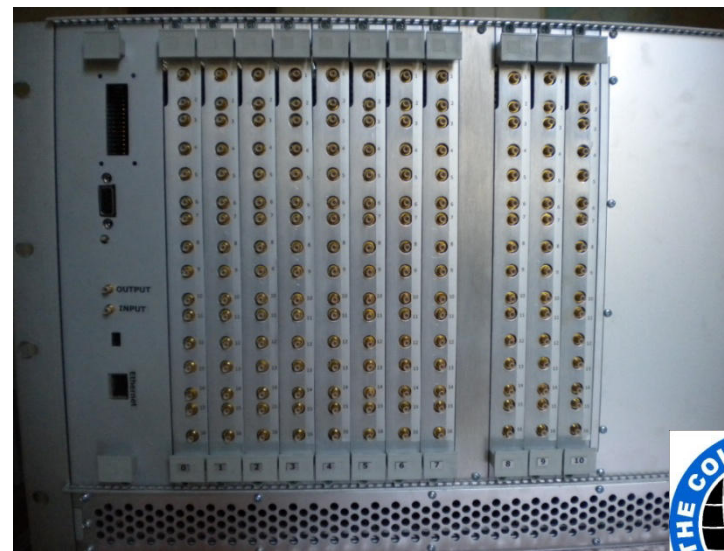
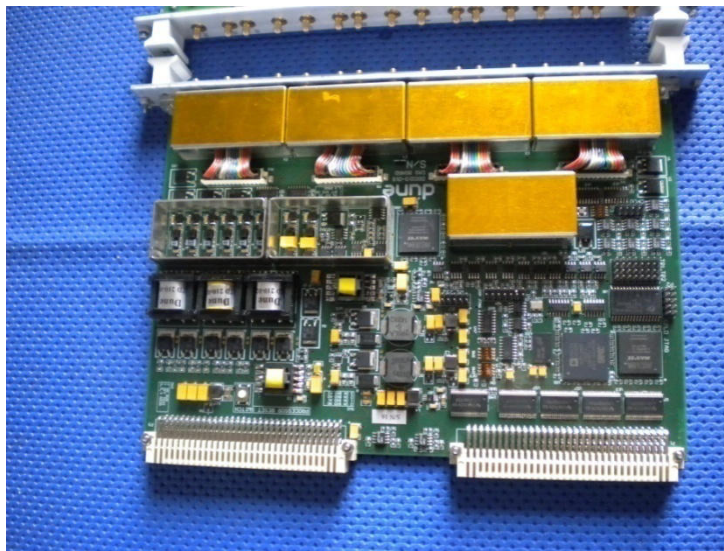
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LATEST DEVELOPMENTS

ACOUSTIC ACQUISITION AND PROCESSING SYSTEM: The acquisition system is composed of a proprietary sub-rack, a number of acquisition boards (CAS) and one AM control board. The system is flexible because in a sub-rack it is possible to allocate from 1 to 16 CAS boards. Therefore the system is capable of acquiring up to 256 analog channels.

Each CAS board performs simultaneous sampling of 16 analog channels, with data rate up to 144 KHz and resolution of 24 bits. A DSP (ADSP21469 SHARC) is included on the board; the processor speed is 450 MHz. It is able to compute a 1024 Point Complex FFT (Radix 4, with Reversal) in 20,44 μ s.

TEDS technology is managed on the board, noise level: - 140 dB with respect to maximum input level, channel amplification of 20 dB can be selected.



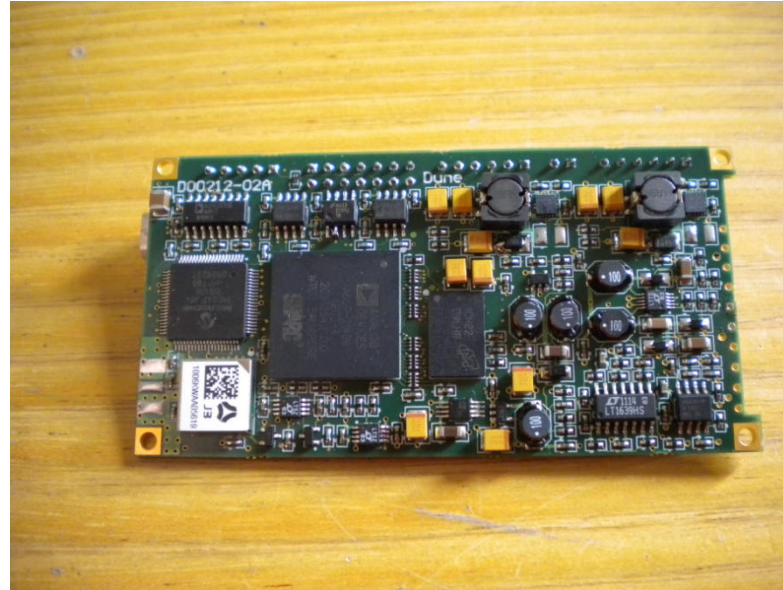
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SMALL BOARD FOR ACQUISITION AND PROCESSING OF INERTIAL DATA:

The board is able to acquire data from several standard IMUs and from a GPS receiver and sends positioning information to a radio-modem.

Board features:

- Data from standard IMUs are acquired by RS-422 or USB ports,
- Internal GPS receiver is provided,
- Data can be transmitted through a radio-modem connected via RS-232,
- Internal acquisition and processing of cardiac waveforms,
- on board DSP (ADSP21469 SHARC) included; the processor speed is 450 MHz, it is able to compute a matrix inversion 15 x 15 in 40 microseconds.



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BLACK BOX for inertial data processing:

A small board including ADSP21489 has been realized to process data coming from a MEMS IMU. This system implements the localization of pedestrians inside buildings or ambients where the GPS signal is denied. The board computes the X, Y and Z coordinates and transmits them to a control station via a conventional radio-modem.

