



dune

Real-time, multiprocessor, parallel boards
System analysis, signal processing, algorithm development
Digital wireless communication

Wideband acquisition and SDR processing board
RF demodulator and processing board
Fast multichannel acquisition and processing
Inertial localization for pedestrian

Automation Department
Via Britannia 54 - 00183 Rome - Italy
Tel: +39 06 77203350
Fax: +39 06 97605807

System analysis department
Via Tracia 4 - 00183 Roma - Italy
Tel: +39 06 70451252
Fax: +39 06 77200919

info@dune-sistemi.com

www.dune-sistemi.com

DUNE is a Small Enterprise operating since 1980 in R&D, aerospace, defence, underwater acoustics, industrial control and communications.

Over the last 40 years we have focused our activities in the fields of design, simulation and development of SW processing architectures for hard real-time systems on multi-core and multi-processor platforms (Applications are Radar, Sonar and Satellite Systems, Robotic and Industrial Control Systems, Inertial Navigation Systems). We performed management of EU Research Projects (Wireless networks, GSM, UMTS, LTE, LTE-A, femtocells, picocells, broadband communication networks). In addition we design and develop dedicated HW solutions for real-time purposes.

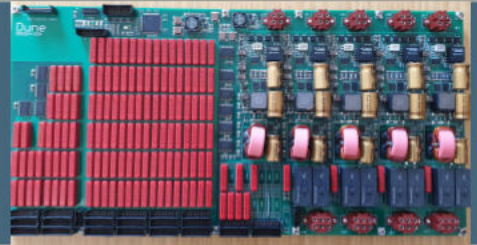
Flexible processing architectures are exploited to prevent or mitigate the risks related to the obsolescence providing the Customers with systems, easy to be migrated on innovative platforms, which minimize program risks, reduce migration costs and accelerate time to deployment and time-to-market.

Acquisition and Processing Systems

- System analysis and requisite definition (performances, timings, computational weights, assessment of system limits and constraints, system behavioural simulations) Platform selection support (evaluation, benchmarks)
- HW solutions for real-time acquisition/processing purposes on Customer specifications (low-noise and high-gain analog front-ends up to 4 GHz, wideband demodulators, hard real-time data acquisition and processing boards, mechanical infrastructures with special design)
- Strategies to prevent and mitigate system obsolescence and manage high or not uniform throughputs, run-time errors and failures (flexible multiprocessor architectures, automatic re-configuration strategies, redundancy for fault management, algorithm parameterization)
- Real-time architecture design and development (processor scheduling and affinity management, inter-processor communications, inter-processor communication frameworks, dynamic circular buffering)
- Algorithm definition, optimization, simulation and development (partitioning, parametric serialization and parallelization, caching and processing optimization, performance assessment)

The company follows the whole project life-cycle and provides the entire SW and HW documentation (requirements, specifications, software, test and manual documents) in agreement with the Standard UNI ISO 9001:2015 and the MIL-STD-498.

Radar and Sonar, Emulators, Acquisition and processing, Navigation and tracking, Industrial control, ATE for avionic systems, Wireless communication, Image processing



RF Demodulator 400 MHz – 5 GHz
Large Band I/Q
conversion in base band



All-purpose FPGA VIRTEX 5, 6 and 7 Platforms
and a Freescale communication processor



The images illustrate three different solutions
of HW SDR with a scalable complexity level.
Every solution incorporates a high performance
FPGA, ADC and external memory to implement
Digital receivers also in MIMO configuration



ASU2:
Antenna Substitution Unit
for EFA Eurofighter Typhoon



Management of RF signals:
6 -18 GHz with proprietary boards



ARIANNA

WEARABLE SAFETY SYSTEM

ARIANNA is a special product for indoor localization of pedestrians. It is a system designed for first responders such as Police, Civil Protection and Firefighters and more generally knowing the location of an operator is an important element to determine security and success of the operations.

The system includes an Inertial Sensing Unit to be attached inside or outside a shoe heel, a Computing Unit processing raw data and a MMI SW used to acquire, integrate and display the path walked by the operators wearing the system.

