

Annuncio di Seminario
Nell'ambito del corso "Affidabilità di Componenti e Sistemi VLSI"
mercoledì 20 gennaio ore 9:00 sala riunioni R3

Reliable and Dependable design strategies and technologies for digital designs in space applications

Speaker: Dr. Gianluca Furano
European Space Agency

A modern satellite can be seen, from the on-board electronics (avionics) point of view, 'just' as a big and expensive embedded system. Many modern spacecraft require fail-tolerant avionics, thus being able to self-reconfigure after an unexpected event. From the other side the ever-increasing complexity of flying hardware (and accompanying SW) multiplies the options and thus the test cases, making a full coverage of all the reconfiguration possibilities very difficult to pursue. While automated test beds for embedded systems are a reality for industrial applications the small size of space market has so far limited both the standardization coverage and even the transfer of knowledge and lessons learnt across the European space sector. Therefore challenging trade-offs, with high risk of design pitfalls are often inevitable for designers who are obliged in one side to deal with mission's demands in terms of objectives and criticality, and in the other side to take into account of the available resources and cost limits.

After a general introduction on availability and reliability concepts for Space missions, this seminar will discuss the design of memory systems for spaceborne computers.

The seminar will include a discussion of the following topics:

Memory classification

- Review and discussion of spaceborne memory system architectures in both manned and robotic NASA missions
- Robust memory system design and criteria
- Impact of software on memory system integrity
- Frequently seen problems and lessons learned
- Component considerations - Cell and device failures - Lock up
- Recommendations

Speaker's short bio

Gianluca Furano, works in European Space Agency's in Data System Division since March 2003. He is in charge for research and development activities and for supporting ESA projects and missions in the field of spacecraft data systems and the related architectures.

Among's Gianluca interest are in ESA are on-board computers and their major components, such as microprocessors and support components, meeting very stringent requirements in terms of radiation tolerance, reliability, availability, and safety; key avionics building blocks such as platform mass memories, remote terminal units, on-board buses and data networks; on-board and space to ground data communication protocols including protocol security aspects.

Gianluca also provides support to European standardisation (CCSDS, ECSS) in areas such as telemetry, telecommand and on-board data, wireless and monitoring & control interfaces

Contatto: Marco Ottavi (ottavi@ing.uniroma2.it)