TÜBİTAK
UZAY

Space Technologies Research Institute

CALL for Partnership from TÜBİTAK UZAY, Space Technologies Research Institute, TURKEY on the FP7 Programme, SPACE Theme

We are looking for partnership and cooperation in **Space Critical Technologies** under the **4th Space Call of FP7**. We propose to be a work package leader or partner on the following critical technological areas in research projects.

Specific Sectors of Interests:

• ASICS

Research Topic According to the Work Programme 2011:

Activity: 9.2. Strengthening the foundations of Space science and technology
SPA.2011.2.2-02 Space critical technologies
Space Work Programme declares developing priority technologies. TÜBİTAK UZAY has expertise to supply the requirements defined in EC-ESA-EDA Joint Task Force (JTF) Final Report.

Suggestions for Cooperation and Specific Expertise of TUBİTAK UZAY on suggested areas:

TÜBİTAK coordinates space R&D activities in Turkey. TÜBİTAK UZAY is one of TÜBİTAK's research and development units, which has initiated satellite technologies in Turkey.

- We want to work in cooperation with a project team for designing and development of ASICS (Deep Submicron)

EC-ESA-EDA Joint Task Force Final Report defines ASICS (Deep Submicron) requirements: *"...Low power very high performance sub micron technologies for Data path and signal processing applications. Development of rad hard, long life-time libraries for commercial DSM, definition of "platform ASIC architecture" ASIC technology including High Speed Serial Links (as hard macro and standalone chip). Validation and space qualification..."*

TÜBİTAK UZAY has very experienced VLSI Design Group, which has circuit design and integration capabilities for a wide range of electronic applications and ASIC design experience. Some of our designed ASICs are:

- An AES (Rijndeal) Encryption ASIC in 0.35um 5-metal CMOS technology to be integrated on the image data compression path of a satellite subsystem.
- 1024-bit RSA Encryption ASIC in 0.35um 5-metal CMOS technology to be integrated on the telemetry/telecommand path of a satellite sub-system
- 125Mbps Spacewire interface controller and high speed communication controller design on FPGA on the data path of the "RASAT" LEO satellite platform
- A Fully integrated JPEG 2000 Image Compression ASIC on FPGA for an on-board multi-spectral, real-time image compression sub-system "GEZGİN-2" on the "RASAT" TÜBİTAK UZAY's LEO satellite platform
- A Baseband signal processing ASIC on FPGA for the 100Mbps X-Band Transmitter Module of our (RASAT) LEO satellite
- A CCD Array type image sensor readout and Interface Controller ASIC on FPGA for the multi-spectral camera "ÇOBAN" on the BİLSAT-1 LEO satellite (launched in 2003).

The most complicated of our designed ASICs is a fully integrated JPEG 2000 Image Compression ASIC for multi-spectral, real-time image compression on-board satellite. This ASIC has several sophisticated image processing features in addition to the ones specified in CCSDS 122.0-B-1.

TÜBİTAK UZAY has full-custom ASIC design experience, especially in construction of logic design libraries for semi-custom VLSI design.

- **TÜBİTAK UZAY can successfully collaborate with other European researchers on design activities in Critical Technologies. TÜBİTAK UZAY has qualified critical technology expertise to deliver for European non-dependence process**

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