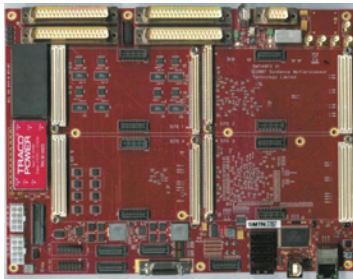




April 2007

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The PowerPC™ saga continues in your FPGA

The PowerPC™32-bit RISC processor core is supported in the Sundance's firmware for the Virtex-II pro ([SMT338VP30](#), [SMT398VP70](#)) and Virtex-4 FX ([SMT339](#), [SMT362](#)) modules and carrier boards ([SMT148-FX standalone](#), [SMT150Q PCIe](#) & [SMT329 VME64/VXS](#)).

After having connected a comport between a PowerPC and a DSP module, controlled some LED peripherals from a PowerPC, Francois has now successfully demonstrated how to access 4MB ZBTRAM from the PowerPC's On-chip Peripheral Bus (OPB) and Processor Local Bus (PLB) in the SMT339's FX60 with [Xilinx Platform Studio](#) tool suite and the [Sundance software functions](#).

The mixed DSP, FPGA and PowerPC combinations provide the most powerful embedded processing solution for all aerospace and defence prototypes, wireless communications, multimedia broadcast and industrial control and supervision systems.

[More Details](#)

Sundance give you a rendezvous'

After the big events of RTS Embedded Systems 2007 (Paris, France), Embedded World (Nuremberg, Germany), Components for Military and Space Electronics (Los Angeles, USA): [DSP Valley](#) has kindly invited Sundance, as their associated partner, to participate at the [DATE'07 exhibition](#) in Nice, France. DSP Valley is a technology network organisation, focusing on the design of hardware and software technologies for digital signal processing systems.

Sundance will be next represented by [KK ROCKY](#) at the [10th ESEC expo](#) in Tokyo, Japan. The Software Defined Radio Development Station ([SDR-DS](#)) and the Advanced Imaging ([SMT8039](#)) systems will be demonstrated live!

Sundance will also take part of several worldwide seminars that will be announced soon in our website...

[More Details](#)

Zoom in on the SUNRISE mission

SUNRISE is a mission to study the structure and dynamics of the solar magnetic field. The [Instituto de Astrofísica de Andalucía \(CSIC\)](#) in collaboration with other research institutes supply the [Imaging Magnetograph Experiment](#) (IMaX).

IMaX is an experimental solar magnetograph that produces very high resolution vector magnetograms of the solar surface with a spatial resolution of 70 km. IMaX is one of the post focal instruments of the Sunrise mission that contains a 1 metre aperture telescope. The stratospheric balloon is planned to fly for 10-12 days from the Antarctica in the framework of the NASA Long Duration Stratospheric Balloon.

Image acquisition and camera control is made with two dedicated [SMT374](#) boards. The FPGA main task is camera control, image accumulation and pre-processing (demodulating the Stokes signals). The DSPs are in charge of compressing the image with a lossless algorithm.

The DSP Master synchronises the Host computer, the acquisition and demodulation logic, the optical devices logic, and the other three DSP coprocessors. The coprocessors are used for the lossless JPEGLS compression of images. Communication between DSPs is done through a proprietary bus called IMaXBus: a hardware and software layer that abstracts the connections between DSPs and FPGA. As information transferred through the IMaXBus is accessed by a custom SDRAM controllers, all memory operations use long bursts making the whole system very efficient. It allows the images to be directly transferred from one CCD, connected to DSP Master, to any other DSP in the system. The images are demodulated, compressed and sent to the DSP Master. A header is added to every image and then it is sent to the Host for further processing, telemetry and storage.

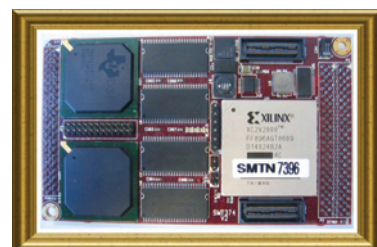
The continuation of IMaX instrument includes the integration and calibration tests with solar light (2007), integration in the SUNRISE platform (2008) and polar flight (2009).

[More Details](#)

Article written in cooperation with Jose Luis Castillo, Researcher, IAA, Spain



[The SUNRISE Long Duration Stratospheric Balloon](#)



[The SMT374 dual floating point DSPs and Virtex-II FPGA](#)

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