ESA Supported General Purpose Standard Microprocessors

Roland Weigand
European Space Agency
Microelectronics Section
Roland.Weigand[at]esa.int

In this session, the portfolio of ESA supported general purpose standard microprocessors will be presented:

- The Atmel space microprocessors (TSC695, AT697)
- The Next Generation Microprocessor (NGMP) under development by Aeroflex-Gaisler
- ESSP System-On-Chip devices AT7913 (SPW-RTC) and SCOC3
- The status of SW development tools will be addressed as well.

The word "standard" refers here to the concept of Application Specific Standard Product (ASSP), for which a concise definition can be found in Wikipedia:

> An **application specific standard product** or **ASSP** is an integrated circuit that implements a specific function that appeals to a wide market. As opposed to ASICs that combine a collection of functions and designed by or for one customer, ASSPs are available as off-the-shelf components. [...]

"General purpose" refers to the use of a common architecture, not specialised to specific control or DSP tasks, for which know-how and SW development tools are commonly available. Over the last three generations, the SPARC architecture has been selected, and in accordance with user requirements pronounced at a round-table in 2006, the 32-bit SPARC V8 has also been selected for the next generation.

The attribute "ESA supported" means that the development is to a significant extent funded by ESA and driven by ESA contracts. The common requirement is that parts, a comprehensive set of documentation, technical support and SW tools shall be available as off-the-shelf products under fair and equal conditions to
 users in ESA member and participating states
. "ESA supported" does not mean that ESA is the support hotline, even though ESA may exceptionally provide support – if our manpower allows. It is also emphasised here that technical support and SW tools do not come for free. They either have to be included in the parts prices, or they have to be at extra charge. The availability to users outside the ESA member states, though not our main objective, is not excluded. It is however subject to export regulations of the countries in which the parts are manufactured.

The acronym ESSP therefore is defined as "ESA Supported Standard Product" or "ESA Supported ASSP"

Standard products can be established under different business models, depending on whether the parts and technical support are provided by the foundry or by the design house. Common-mode schemes where both, parts and support are procured through the same entity (foundry or design house) have the advantage of offering a unique interface to the user. The "mixed-mode" scheme where parts are procured through the foundry and support by the design or IP house make most efficient use of the specific competences of each of the players: the foundry for manufacturing and handling qualified flight parts, and the design house for its specific knowledge of the design and the IP cores. All schemes may require difficult negotiations between the parties involved concerning financial (royalties) and IPR issues.

Other types of microprocessors, such as proprietary System-on-Chip ASICs, Digital Signal Processors or specialised microcontrollers are considered in sessions 2 and 3 of this round-table.

European Space Agency
Agence spatiale européenne

ESTEC

Postbus 299 - NL2200 AG Noordwijk - Keplerlaan - NL 2201 AZ Noordwijk ZH -

GeneralPurposeStandardMicroprocess
ors-Abstract-MPSA.doc

This document contains 1 pages