SIMILAN

SIMulation & Implementation high performance fitted to digitaL signAl processiNg

ON GOING PROJECT

Processors technologies have progressed for few years and the main evolution to use the maximum of transistors is to juxtapose calculation units. Thus, the simple-core processor is now replaced with many-core processors. However, to take advantage of the powerful calculator, the algorithms have to be developed in parallel form. Indeed, only parallelization experts are able to use parallel machines and the technical experts on signal processing subjects cannot use parallelization easily.

Two main objectives are:

▶ To make access to parallel technologies easier for signal processing experts (non-specialists of parallel technologies).

▶ To optimize parallelization tools thanks to the knowledge of needs and constraints linked to digital signal processing.

TECHNOLOGICAL OR SCIENTIFIC INNOVATIONS

▶ This tool will use a high-level description, multi-languages libraries and a material architecture description.

▶ The main technological and scientific innovations adressed by SIMILAN are:

• Using Scilab scientific computation abilities in Java programming to add specific instruction in the java virtual machine able to process. These instructions will allow to run Scilab software on this java virtual machine.

• Making access to parallel technologies easier for signal processing experts (non-specialists of parallel technologies). The approach is to set up rules or tools, like specific graphical operator or information, which will help the developers to write a software code optimised for parallel tools and targets.

• Automatic management of data sharing to optimize the parallelization. Several methods will be studied like the advanced pavement analysis techniques or software pipeline.

• Furthermore, using Scilab in ASTRAD platform instead of Matlab scientific com-putation software is also a real economical interest.
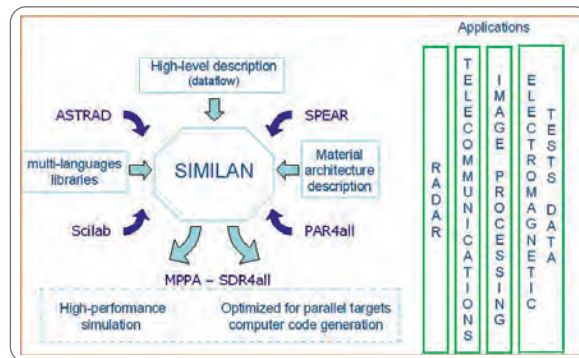
STATUS - MAIN PROJECT OUTCOMES

▶ SIMILAN's aim is to share a tool with a signal processing community to optimize it and improve it considering mutual constraints. This tool will be validated for several domains: radar applications, telecommunications, image processing and electro-magnetic tests data processing.

▶ SIMILAN will make the way from new algorithms to real-time implementation easier and will let a software environment enable to manage signal processing from the simulation to computer code generation.

CONTACT

Marie-Anais MARSALY
THALES AIR SYSTEMS
+33 (0)1 64 91 73 77
marie-anais.marsaly
@thalesgroup.com

PARTNERS

Large companies:
DASSAULT AVIATION, THALES AIR SYSTEMS, THALES RESEARCH & TECHNOLOGY

SMEs:
DXO, HPC PROJECT, IS2T, KALRAY, SCILAB ENTREPRISES

Research institutes, universities:
ONERA, SUPELEC, UNIVERSITE PARIS DESCARTES

PROJECT DATA

Coordinator:
THALES AIR SYSTEMS

Call:
FUI10

Start date:
June 2011

Duration:
30 months

Global budget (M€):
5.2

Funding (M€):
1.9

Related Sytematic project(s):
OPENHPC, TER@OPS, OPENGPU, CHAPI