The DALI team is developing a unified research area in order to improve the digital quality and high performance of calculations. DALI enables experts in architecture, micro-architecture, simulation, and computer compilation and arithmetic to work together in the same team, which is considered as rare in France.

Research activities carried out over the 2005-2009 period involve hardware (generalist processors, emerging architectures), software (arithmetic and precision), simulation and automatic certification tools, and applications (digital algorithmics, cryptography, critical embedded systems, formal calculation, control theory).

Team Members (May, 2009)

- Defour David 01/09/2004 MCF UPVD
- Goossens Bernard 01/09/2003 PR UPVD - HDR
- Langlois Philippe (dir.) 01/09/2003 PR UPVD - HDR
- Negre Christophe 01/09/2006 MCF UPVD
- Martel Matthieu 01/09/2007 MCF UPVD - HDR
- Parello David 01/09/2005 MCF UPVD
- Bouache Mourad 01/09/2006 01/09/2010
- Collange Sylvain 01/09/2007 01/09/2010
- Ke Chen 01/09/2007 01/09/2011
- Ioualalen Arnault 01/09/2009 31/08/2012
- Giorgi Pascal 01/01/2006 31/08/2007
- Petit Eric 01/01/2009 31/08/2010 (ATER)
- Senouci Benaoumeur 01/09/2007 31/08/2009
- Vecchié Eric 01/01/2005 31/08/2005

Theses supervised
- Graillat Stef Defended Nov. 2005 (MCF UPMC, LIP6)
- Louvet Nicolas Defended Nov. 2007 (MCF, U. Lyon 1, LIP)
• Consolidation of team created as young researcher ACI 2003-2006 via heavy external recruitment over 2005-2007
• Thematically-coherent unit with complementary expertise
• Recognition and integration of PhDs trained within the team

Contracts, Transfers and Development

• Research contract with Airbus and CEA, MASSANE project: validation tool for control systems on digital flights
• Research contract with FNRAE, SARDANES project: certified transformation of Scade codes for digital precision
• Research contract 2006-2008 between DALI, Polytech’Paris and a French energy group, new architectures for scientific computing
• Technology intelligence collaboration with N’Vidia and ATI since 2007 on general computing on graphics cards (equipment donation)
• Young researcher ACI 2003-2006: Digital software and arithmetic quality on computers
• ANR white program 2007, EVA-Flo (Automatic Evaluation and Validation for FLOttant)
• ANR white program 2007, BioWic (Workflow for intensive bioinformatics processing)
• Member of UNISIM Consortium with CEA, INRIA, Princeton University, Brigham University, Univ. Polyttech. Catalunya, Barcelona Computer Center, Ghent University, ARM, ST: software simulation platform (participating institution)

International Cooperation

• University of Boumerdès, Algeria
• T.U. University, Hamburg-Harburg, Germany
• Universitat de Girona, Spain
• University of Manchester, United Kingdom
• University of Szeged, Hungary
• University of Waterloo, Canada
• Intel Nizhnyi-Novgorod, Russia
• University of Novosibirsk, Russia
• University Waseda, Tokyo, Japan
• University of California, Irvine, USA
• Rice University, Houston, USA

Software Platforms

• OOSim: modular cycle-level simulator of generic superscalar processor based on the PowerPC instruction set. UNISIM, licence BSD
• Barra: NVIDIA G80 - CUDA graphics processor simulator. UNISIM, BSD license
• Boost: Interval on GPU: guaranteed interval arithmetic in CUDA and Cg. Boost Software Licence