HIGH PERFORMANCE AND EMBEDDED ARCHITECTURE AND COMPILATION

D1.2 MOBILITY REPORT

March 31, 2010

PERIOD COVERED: FEBRUARY 01, 2009 – DECEMBER 31, 2009

FINANCIAL PERIOD COVERED: FEBRUARY 01,2009 – JANUARY 31, 2010

Grant Agreement no: ICT-217068

Note:

the text below is a copy from page 19 until 28 of the Periodic Project Report

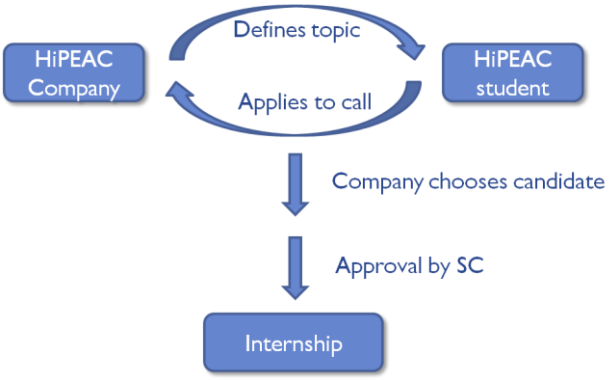
WP1: Mobility

Coordinator: Edinburgh, Michael O'Boyle

The mobility program is aimed at stimulating mobility between all partners and members of the network. The mobility program has 4 mobility instruments, each targeted at a different type of collaboration.

Task 1.1: Internships (coordinator: ARM, Emre Özer)

HiPEAC yearly funds company internships in order to increase *industry-academia interaction*. Every year, the HiPEAC member companies list the research topics for which they are seeking interns. *HiPEAC students* are able to apply for the internships. The call closes mid-February, after which the companies select their candidates.



Once the companies have selected the candidates, the Steering Committee decides on the final allocation. The purpose of this instrument is to have as many interns in companies as possible and to convince companies to create more self-financed internship positions for students.

Internships period 1

During the first year, internships were covered by HiPEAC 1.

Internships period 2

A call for internships was launched during the Conference and Cluster meetings in Paphos, Cyprus. The call was open for all HiPEAC students.

The available internships were posted at the HiPEAC website.

In total, the companies proposed 16 internships topics. 38 different students applied for one or more internships.

In 2009, the following internships have started:

Student	Host
David Romero Yuste	IBM
Javier Merino	IBM
Miranda Cupertino	IBM
Giacomo Gabrielli	ARM
Sjoerd Meijer	NXP
Thomas Bernard	NXP
Adriano Sanchez	NXP

Internship procedure

Calls

The internship call is opened by contacting all HiPEAC Companies (not only partner companies). They are invited to publish their internship positions at the HiPEAC website, thus in effect using the HiPEAC website as dissemination tool for their positions.

When all internship positions have been gathered, the HiPEAC students are invited to apply for the internships. From a students point of view, there is no distinction whether an internships is HiPEAC-financed or company-financed. HiPEAC partner companies receive an equal part of the funding.

Internship assignment

The companies decide whom (if any) to accept for the available internships positions.

Internships Grant report

After the internship period, every applicant is requested to write a brief activity report.

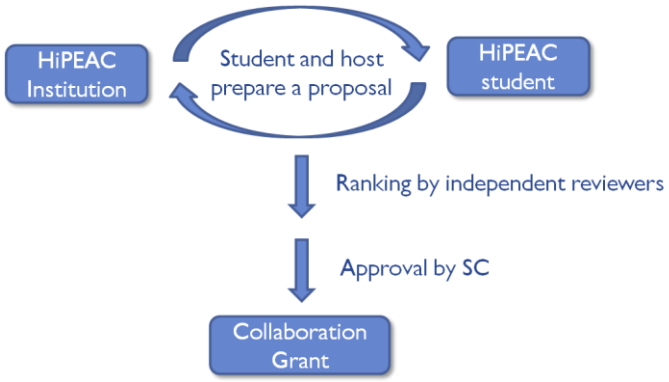
This report contains the following items:

- An overview of the activities performed at the host's site
- Research results, publications, project proposals, …
- Future plans for collaboration with the host

Progress indicator: # internships: 7

Task 1.2: Collaboration grants (coordinator: Edinburgh, Michael O'Boyle)

HiPEAC yearly funds several collaboration grants for *HiPEAC students* wanting to visit another *HiPEAC institution* (either an academic institution or a company). The students and their hosts prepare a research project for the stay (hence the topic is defined by the students and their hosts). The Steering Committee decides on the final allocation of the collaboration grants – based on the quality of the proposals. Although targeted at PhD students, postdocs are also eligible for this program.



The objective of the collaboration grants is to stimulate real collaboration between HiPEAC members. The initial goal is to fund 15 collaboration grants per year. We hope to get many more applications for collaboration grants, and that the non-granted applications will be funded anyhow by the institutions involved. For some students, this instrument might be a step towards a European PhD.

Collaboration grant procedure

Calls – change from Year 1

In the first year, we received comments that the first call, which was launched during the Spring Computing Systems Week, was too late.

To answer this concern, the 2009 call was launched in March, and the application deadline was set to May 18th. This allowed most collaborations to start in the second half of the year.

Collaboration Grant Ranking

The collaboration grant proposals are ranked and the best proposals are granted.

The criteria used for ranking are:

- Scientific quality of the proposal
- Track record of the applicant
- Current linkage of the applicant to the host research group
- History of grants
- Independence of applicant
- Possibility for a new linkage between research groups

The ranking is done by independent reviewers. The reviewers for this year's collaboration grant were:

- Michael O'Boyle, University of Edinburgh (coordinator)
- André Seznec, INRIA/IRISA
- Stefanos Kaxiras, University of Patras
- José Duato, Universidad Politecnica de Valencia

The Steering Committee then makes the final decision on the grants, based on the ranking

Collaboration Grant Report

After the collaboration grant period, every applicant writes a brief activity report.

This report contains the following items:

- An overview of the activities
- Research results, publications, project proposals, …
- Future plans for collaboration with the host

Call: May 2009

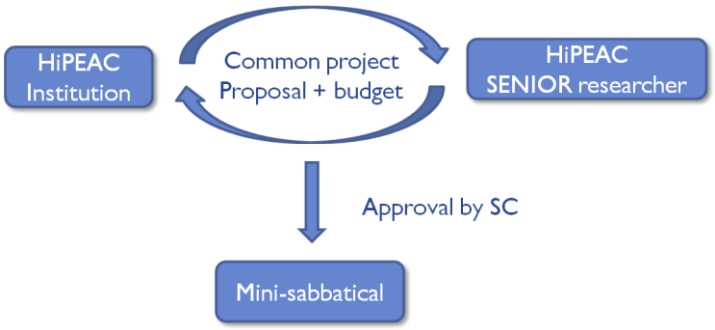
27 proposals were submitted. 15 of those were granted (in 2009, 13 were granted).

Applicant's Name	**Institution**	**Title of the Collaboration**
Hristo Nikolov	Leiden University	Daedalus for supporting polymorphic IP-Modules
Darío Suárez Gracia	University of Zaragoza	VLSI implementation of Light NUCAs
Keshavan Varadarajan	Indian Institute of Science, Bangalore	Cache Coherence Schemes for Multi-core
Caroline Concatto	UFRGS	Run-time Resources Monitoring based on Network-on-Chip Architectures
Victor Jimenez	Barcelona Supercomputing Center	Power-aware advanced scheduling techniques for the IBM POWER6
Marco Santambrogio	Politecnico di Milano	Self-aware and autonomic system
Francesco Paterna	University of Bologna	Mitigating Variability Effects in MPSoCs
Andreas Hansson	University of Twente	Low-Power Extensions to a Network on Chip with Composable and Predictable Services
Vincenzo Rana	Politecnico di	Dynamically Adaptive Architectures for

	Milano	Nomadic Embedded Systems
Frederico Pratas	INESC-ID	Chracterizing the Programmability and Performance Tradeoffs for Different Accelerator Architectures
Ruben Titos-Gil	University of Murcia	Evaluation of prediction schemes for dynamic transactional scheduling in tiled CMPs.
Adrian Tineo	University of Malaga	Productive techniques for the management of dynamic data structures in distributed memory architectures
Tapani Ahonen	Tampere University of Technology	Timing Reliability through Holistic Many-Core System Services (TiReHoSe)
Carmelo Acosta	UPC	Resource Sharing in Heterogeneous Multithreaded Multicore Processors
Enric Tejedor Saavedra	Barcelona Supercomputing Center	Accelerating the parallel distributed execution of Java applications using

Progress indicator: # collaboration grants: 15

Task 1.3: Mini-sabbaticals (coordinator: BSC, Mateo Valero)



HiPEAC has a program of mini-sabbaticals for HiPEAC *faculty members and senior researchers* as a part of its overall efforts to maintain a high quality research program and to facilitate research collaborations. Mini-sabbatical visits are typical stays for one month or maybe longer at another member company or academic site, or even at a non-HiPEAC institution that is looking to join or collaborate with HiPEAC.

Mini-sabbatical procedure

The candidate for a sabbatical leave and his/her host have to prepare a common sabbatical project, including a budget, which has to be approved by the Steering Committee. BSC is in charge of promoting and managing this program. Mini-sabbatical application calls are open all year long. Reimbursement is done through a simple per diem plus transportation costs.

Period 1

The first period of HiPEAC was used to set a procedure and agreement for the mini-sabbaticals. Although no specific call or announcement was launched, we granted two mini-sabbaticals:

Name of applicant	**Affiliation**	**Host institution**
Enrique Torres	University of Zaragoza	International Computer Science Institute
Rainer Leupers	RWTH Aachen	ACE, Amsterdam

Enrique Torres has finished his mini-sabbatical. A report on this mini-sabbatical was published in HiPEAC Info 18.

Period 2

Rainer Leupers finished his mini-sabbatical at ACE, Amsterdam. His report was published in HiPEAC Info 20.

As foreseen, the mini-sabbatical program was announced in the Newsletter, issue 19.

A direct mail from the mini-sabbatical coordinator to the eligible members was sent shortly afterwards.

We currently have two applications for a mini-sabbatical:

Name of applicant	**Affiliation**	**Host institution**
Ed Deprettere	University of Leiden	Sofia University, Bulgaria
Stefano Crespi	Politecnico Di Milano	Harvard University

Progress indicator: # mini-sabbaticals: 2

We will promote the mini-sabbaticals more aggressively in 2010, hoping to improve the progress indicator considerably.

Task 1.4: Cluster Meetings (coordinator: INRIA, Olivier Temam)

The general cluster meetings are the occasions the networking events at which the *HiPEAC community* gathers, discusses ongoing research, and makes plans for the future. The primary goal of the general cluster meetings is to bring together a major part of the HiPEAC community during 2-3 days. During general cluster meetings, all clusters and task forces have their meeting, chaired by the cluster coordinator. During the general cluster meetings, there are also break-out sessions where individual members can meet to have detailed discussions about their common plans. At least once a year a general cluster meeting also hosts a general assembly meeting (Task 4.2) and twice a year it hosts an industrial workshop (Task 3.9).

In order to limit the amount of travelling, cluster meetings are often co-located with other major events. For the same reason, the HiPEAC general cluster meetings are also a good opportunity to schedule meetings of other European projects before or after. As a result, these general cluster meetings have become major networking events for the European HiPEAC community.

Cluster Meeting, Infineon, Munich

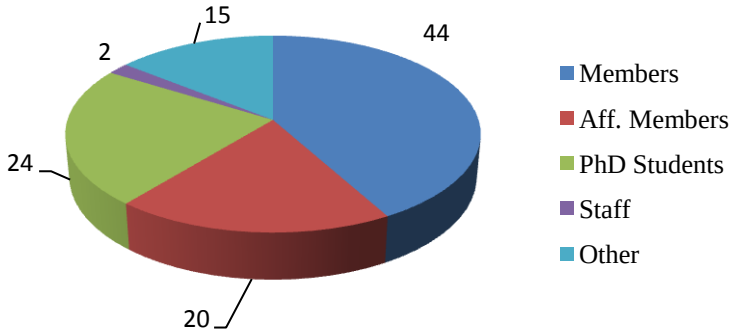
The cluster meeting in Infineon was hosted by Attila Bilgic. It took place at the Infineon campus on June 2-4, 2009.

Attendance

106 people attended the cluster meetings.

The participants's distribution was as follows:

- Members: 44
- Affiliated members: 20
- Affiliated PhD students: 24
- Staff: 2
- Others: 15



The country distribution:

- Austria: 2
- Belgium: 7
- Cyprus: 1
- Finland: 1
- France: 9
- Germany: 27
- Greece: 6
- Ireland: 1
- Israël: 3
- Italy: 5
- No country: 3
- Norway: 2
- Poland: 3
- Portugal: 2
- Spain: 16
- Sweden: 1
- Switzerland: 2
- The Netherlands: 6
- Turkey: 1
- United Kingdom: 7

Program

Tuesday, June 2, 2009			
Time slot	**room A**	**room B**	**room C**
All day	Industrial Workshop		
Wednesday, June 3, 2009			
Time slot	**room A**	**room B**	**room C**
08:30-9:00	General session		
9:00-10:30	Adaptive Compilation	Reconfigurable computing	
10:30-11:00		New paradigms and technologies	
11:00-12:30	Multi-Core Architecture	TF on Education	Split Vectorizations
12:30-14:00			*Milepost*
14:00-15:30	Interconnects	EDA	*Milepost*
15:30-16:00			*Milepost*
16:00-17:30	Simulations	Virtualization	*Milepost*
17:30-19:00	TF Applications	TF Reliability	
Thursday, June 4, 2009			
Time slot	**room A**	**room B**	**room C**
9:00-10:30	Compilation Platform	TF Low Power	
11:00-12:30	Programming Models		
12:30-14:00	Farewell		
14:00-15:30		*Acotes*	
15:30-16:00		*Acotes*	
16:00-17:30		*Acotes*	
17:30-19:00		*Acotes*	

Participant's Feedback

36 participants filled in the survey, of which 26 had been to previous cluster meetings. 28 of the surveyees were senior researchers. The other 8 are PhD students.

Most participants come to the computing systems week to network and to listen to interesting talks. The new model where the industrial workshop was on invitation only, received mixed reactions. Some people also enjoyed the spontaneous submissions from the past.

A high value is attributed to the keynote speeches of the workshop and in the cluster meetings.

The keynotes should receive more attention. In order to increase the quality of the cluster meetings inter-cluster meetings and/or events could be organised. Break-out sessions are considered as valuable as well.

When asked to give their appreciation for a specific event, the following events were rated highest:

- Task Force on Applications
- Task Force on Reliability
- Interconntects Cluster Meeting

The other meetings received ratings a bit lower, but were still highly appreciated.

The expectations of the cluster meetings attendant's were similar to the past meetings:

- Meet other researchers and seek opportunities for collaboration
- Exchange ideas and opinions, gain new perspectives
- Understand long term industry trends and roadmaps
- They expect respectable presenters, a varied program, containing presentations, workshops, tutorials and break-out sessions

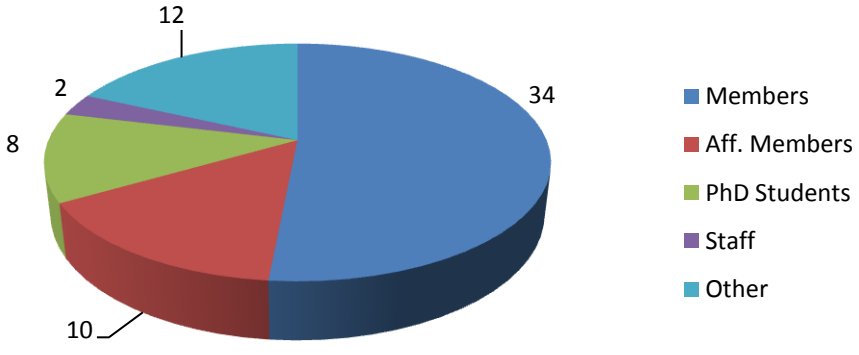
Cluster Meeting, Wroclaw, Poland

The Cluster Meeting in Poland was organised by Zbigniew Chamski from Infrasoft and was held in the Sofitel hotel on October 26 –28, 2009.

Attendance

The Cluster Meetings were attended by 67 people.

- Members: 34
- Affiliated members: 10
- Affiliated PhD students: 8
- Staff: 2
- Others: 12



- Austria: 1
- Belgium: 8
- Cyprus: 1
- Finland: 1
- France: 6
- Germany: 7
- Greece: 5
- Ireland: 1
- Israël: 1
- No country: 3
- Poland: 5
- Portugal: 1
- Russia: 1
- Spain: 6
- Sweden: 2
- The Netherlands: 10
- Turkey: 1
- United Kingdom: 6

Program

Monday, October 26, 2009			
Time slot	**room A**	**room B**	**room C**
All day	Industrial Workshop		
Tuesday, October 27, 2009			
Time slot	**room A**	**room B**	**room C**
09:00-9:30	General session		
9:30-11:00	Design Methodology and Tools	TF Reliability	Hardware Dependency Resolution
11:30-13:00	Simulation	Virtualization	
13:00-14:00	Failure is not an option: Popular Parallel Programming	TF Education	
14:00-15:30	Interconnects	TF Applications	
15:30-16:00			
16:00-17:30	Adaptive Compilation	TF Low Power	
17:30-19:00	Reconfigurable Computing	New Technology/Paradigms	TF Education
Wednesday, October 28, 2009			
Time slot	**room A**	**room B**	**room C**
8:30-10:00	Multicore Architecture		
10:30-12:00	Compilation Platform		
12:00-13:30	Programming Models		

Participant's Feedback

23 people filled in the detailed survey, representing about 1/3 of the attendants, which is about the same as previous surveys.

18 people attended a previous cluster meeting. 20 of the 23 were senior researchers.

The detailed rating of the events:

	Low	**Neutral**	**High**	**Avg**
Industrial Workshop on Monday	3	7	7	2.2
Design methodology and tools	1	3	6	2.5
Multi-core architecture	1	4	8	2.5
Programming models and operating systems	0	2	8	2.8
Adaptive compilation	0	6	5	2.5
Interconnects	1	6	5	2.3
Reconfigurable computing	1	3	4	2.4
Binary translation and virtualization	0	2	4	2.7
Simulation platform	1	9	4	2.2
Compilation platform	1	4	4	2.3
Task force on Low Power	1	0	1	2.0
Task force on Reliability and Availability	0	1	7	2.9

Task force on Education and Training	2	1	2	2.0
Task force on Application	0	2	6	2.8
Meeting on new paradigms/new technologies	1	0	8	2.8

Some aspects that could be improved are:

- Location not easy to reach
- Industrial workshop not less research-oriented
- Lack of social event and time to network

Future Work

The feedback we received from the participants contained some clear suggestions to make the computing systems week more attractive and more productive.

- Networking is one of the main purposes of the computing systems week, so there should be enough opportunities to do this
- The location is vital for the attendance
- The industrial workshop should be technically challenging enough, and keep a relevant industry perspective
- The cluster meetings should have more open discussions
- Some clusters would benefit from a less strict seperation between the clusters in the program

The steering committee will try to answer these suggestions in the next computing systems week.

The next meeting will be held in Edinburgh and will be organised by Michael O'Boyle, who will launch some new initiatives and meeting structure.

- The meeting schedule will be rearranged to allow easier travelling. The meetings will start and end at noon.
- The industrial workshop will fall in the middle of the program. This will make it the main event and it will increase interest and attendance for the workshop
- A reception and joint dinner will be organised to increase networking opportunities
- Focus on innoviation and entrepreneurship: business angels and successful start-up companies will attend and share their stories.
- Instead of per cluster meetings, we will this time aim for cross-cluster meetings focussing on specific topics
- A poster session to increase dissemination of research work and networking
- Awards for best poster or best new collaboration

The program is not yet final, but with these initiatives it is our purpose to give the cluster meetings greater appeal to a greater audience and to improve the aspects that people consider important while keeping the strong points of our current structure.