7th RTD Framework Program

REALITY

Reliable and Variability tolerant System-on-a-chip Design in More-Moore Technologies

Contract No 216537

Deliverable D8.2

Press release

At Project Start

Editor:	Peter Lemmens
Co-author / Acknowledgement:	
Status - Version:	V1.0
Date:	09/08/2008
Confidentiality Level:	Public
ID number:	IST-216537-WP8-D82.doc

The REALITY Consortium consists of:

Interuniversity Microelectronics Centre (IMEC vzw)	Prime Contractor	Belgium
STMicroelectronics S.R.L. (STM)	Contractor	Italy
Universita Di Bologna (UNIBO)	Contractor	Italy
Katholieke Universiteit Leuven (KUL)	Contractor	Belgium
ARM Limited (ARM)	Contractor	United Kingdom
University Of Glasgow (UoG)	Contractor	United Kingdom

1. Table of contents

2. Disclaimer

The information in this document is provided as is and no guarantee or warranty is given that the information is fit for any particular purpose. The user thereof uses the information at its sole risk and liability.

3. Acknowledgements

The author acknowledges contributions by Bart Dierickx and Miguel Miranda.

4. Document revision history

Date	Version	Editor/Contributor	*Comments*
01/08/2008	V0.1	Peter Lemmens	First draft
12/08/2008	V1.0	Peter Lemmens	Final version

5. Preface

The scope and objectives of the REALITY project are :

- Development of design techniques, methodologies and methods for real-time guaranteed, energy-efficient, robust and adaptive SoCs, including both digital and analogue macro-blocks“

The Technical Challenges are :

- To deal with increased static variability and static fault rates of devices and interconnects.
- To overcome increased time-dependent dynamic variability and dynamic fault rates.
- To build reliable systems out of unreliable technology while maintaining design productivity.
- To deploy design techniques that allow technology scalable energy efficient SoC systems while guaranteeing real-time performance constraints.

Focus Areas of this project are :

- “Analysis techniques” for exploring the design space, and analysis of the system in terms of performance, power and reliability of manufactured instances across a wide spectrum of operating conditions.

- “Solution techniques” which are design time and/or runtime techniques to mitigate impact of reliability issues of integrated circuits, at component, circuit, architecture and system (application software) design.

The REALITY project has started its activities in January 2008 and is planned to be completed after 30 months. It is led by Mr. Bart Dierickx and Mr. Miguel Miranda of IMEC. The Project Coordinator is Mr Peter Lemmens. Five contractors (STM, ARM, KUL, UoG, UNIBO) participate in the project. The total budget is 2.899 k€.

6. Abstract

This report describes the public relations efforts done by the REALITY projectteam at the project start. The scope of this activity was put into practice more elaborate than originally defined in the description of work, with the purpose to maximize the impact. Activities went beyond the typical press release to the general public and involved, among other examples, participation at renowned conferences, the setup of a dedicated project booth at DATE '08 and lectures at specific conferences. This was all done within the first months after the project start. The aim was to make public the fact that that groundbreaking research in the area of Reliable and Variability tolerant System-on-a-chip Design will get started by the REALITY consortium and to seek potential interest for the future project results.
This report will give a background of the established approach and the eventual results.

7. List of Abbreviations

REALITY	Reliable and Variability tolerant System-on-a-chip Design in More-Moore Technologies
CAD	computer aided design
DSP	digital signal processing
DOW	Description of work
FFT	fast Fourier transform
HW	hardware
IC	integrated circuit
T0+M6	June 2008 (example)
MS	Microsoft Corporation
QoS	quality of service
SoC	system on chip
SOHO	small office/home environment
SW	software
WP	Work package

8. Overview of Public Relations activities at the start of the project

The following key activities were realized. They are part of the public announcement process which marked the start of the Reality project. Specific exhibitions and conferences were selected in order to approach the general public but also a more specialized audience.

PR Key activities at project start :

- Public Flyer (February 2008)
- Press Release (March 2008)
- Project Booth at DATE '08 (Munich, March 2008)

Supporting PR Key activities :

- ANEAS Workshop (Milano, May 2008)
- Sponsoring of the ESSDERC Conference (Edinburgh, September 2008)

9. Press Release Details

To support the PR activity, at the project launch, a dedicated A4 flyer was prepared in February 2008. The purpose of this A4 was two-fold : i) guiding material for the press and the press release, ii) flyer for distribution to the public, supporters and interested people.

The flyer contents provides a clear overview of :

- Specific scope
- the REALITY project objectives
- the participants of the consortium
- the research challenges and how the team will approach them
- the funding source and programme
- duration and man power of the project
- coherence between the research activities

PR Flyer released February 2008 :

Figure 1 and 2 show the flyer which was compiled to support the press release and public relations activity. Furthermore this flyer is at the disposal of each of the consortium partners to use it for local PR activities or to use it for distribution at local conferences.

REALITY Project Sheet

Reliable and Variability tolerant System-on-a-chip Design in More-Moore Technologies

The "REALITY" project activity provides solutions for coping with variability and reliability issues that occur when scaling to and beyond the 32 nm technology node. A system-level solution is provided by focusing on two main axes : Analysis Techniques and Solution Techniques.
This European Community FP7 funded project is the base for a collaboration between major industrial and academic players in this field : ST, ARM, IMEC, Katholieke Universiteit Leuven, Universita di Bologna and University of Glasgow.

Scope

- As miniaturization of the CMOS technology advances, designers will have to deal with increased variability and changing performance of devices. Intrinsic variability of devices, which begins to be visible in 65nm devices, already will become much more significant in smaller technologies. Soon it will not be possible to design systems using current methods and techniques. Scaling beyond the 32 nm technology node brings a number of problems whose impact on design has not been evaluated yet. Random intra-die process variability, reliability degradation mechanisms and their combined impact on the system level parametric quality metrics are becoming prominent issues. Dealing with these new challenges will require an adaptation of the current design process: a combination of design time and runtime techniques and methods will be needed to guarantee the correct functioning of Systems on Chip (SoC) over the product's lifetime, despite the fabrication in unreliable nano-scale technologies.
- The objective of this project is to develop design techniques and methods for real-time guaranteed, energy-efficient, robust and self-adaptive SoC's.

Technological challenges

- Build reliable systems out of unreliable technology while maintaining design productivity.
- How to cope with increased static variability and static fault rates of devices and interconnects during the circuit and system design phase.
- How to cope with increased time-dependent dynamic variability and dynamic fault rates during the circuit and system design phase..
- Deploy design techniques that allow technology scalable energy efficient SoC systems while guaranteeing real-time performance constraints.

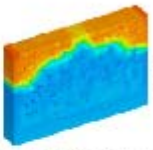

Figure 1 Random discrete dopants in a 35 nm MOSFET from the present 90 nm technology node.

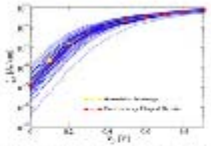

Figure 2 Corresponding variations in the current-voltage characteristics of 200 transistors wit h different dopant distributions

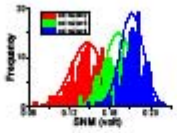

Figure 3 Corresponding distribution of the static noise margins in 6T SRAM cells

Solutions

- Analysis techniques : for exploring the design space, and analyzing of the system in terms of performance, power and reliability of manufactured instances across a wide spectrum of operating conditions (thermal, noise, age).
- Solution techniques : which are design time and/or runtime techniques to mitigate the impact of reliability issues (seen as time-dependent variability aspects) of integrated circuits at component, circuit, architecture and system level.

imec KU LEUVEN ST UNIVERSITÀ DI BOLOGNA ARM University of Glasgow

www.fp7-reality.eu

Figure 1 : Flyer for PR (front)

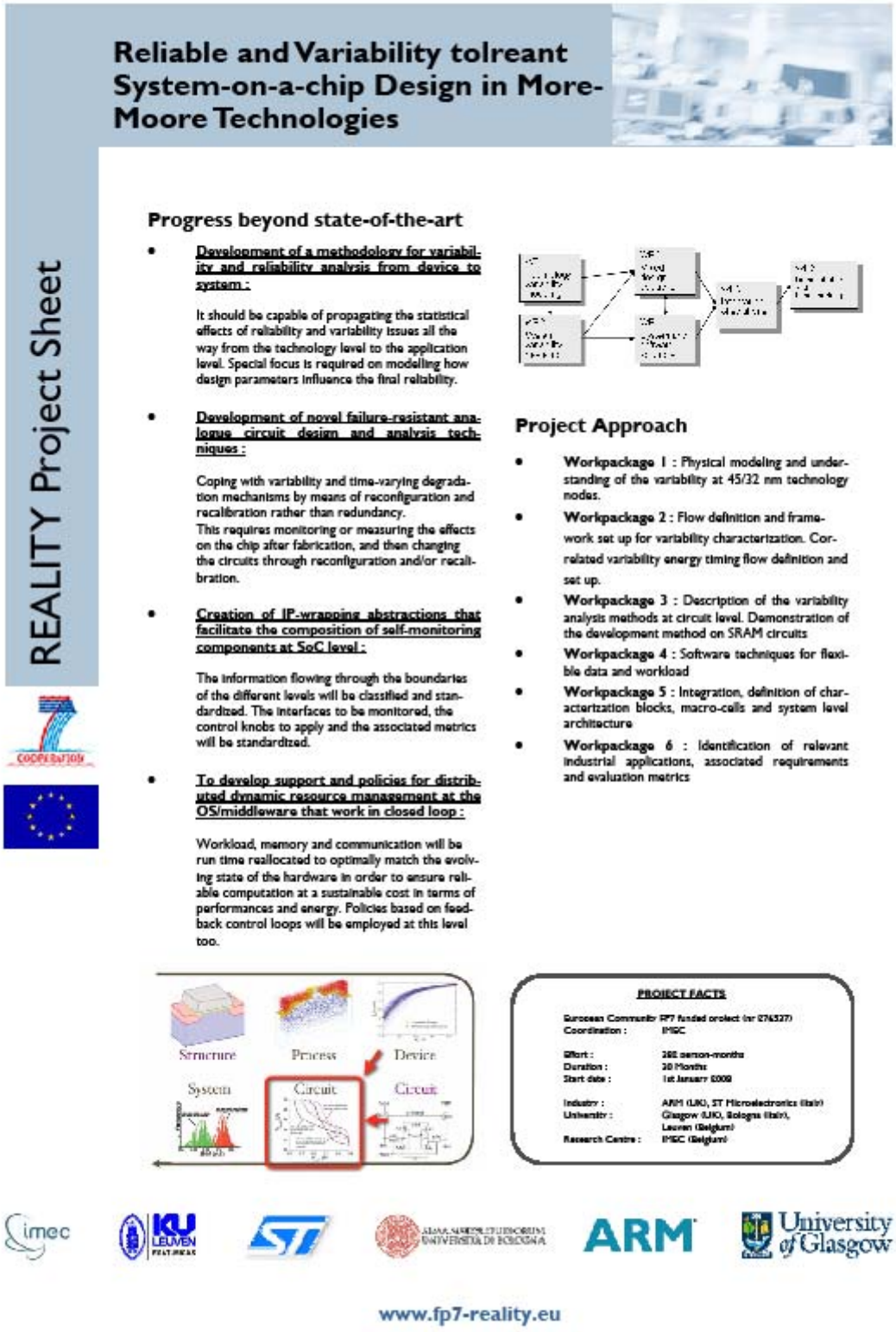

Figure 2 : Flyer for PR (backside)

10. Project Both at DATE '08 & Press Release

The Design, Automation, and Test in Europe (DATE) conference is one of the worlds premier conferences dedicated to electronic and embedded systems. It was held at the ICM in Munich, Germany at 11-12-13th March 2007.
DATE is sponsored by the European Design and Automation Association, the EDA Consortium, the IEEE Computer Society : (TTTC), (CEDA), ECSI, RAS and ACM SIGDA.

REALITY Project Booth :
The REALITY project team decided to participate with a dedicated project booth (Hall B0 Stand EPP 1.1). This booth consisted of a small cubicle, white hard-coated wall panels on 2 sides with the posters, a reception counter & stool, a meeting space and a facility of hosting a 'fringe' meeting. Figure 3 gives an impression.

Figure 3 : Project Booth at DATE '08

The expenditure for this event in total was about 7500 Euro :

- hiring of booth for 3 days : 2500 Euro
- personnel costs (2 people) : 4000 Euro
- travel expenses : 900 Euro

The year 2008 was the first time that the DATE organization put into place a special area for European funded projects.

The project booth was staffed during the full extend of the conference by the REALITY project coordinator and the IMEC WP leader. The main purpose was to announce to the audience the start of the REALITY project, explain the objectives and find potential industrial interest in the results of the project.

In co-junction with the dedicated REALITY project booth, there was the IMEC corporate booth, in the same Hall B0, where life demo's on the REALITY related tools could be demonstrated on the available equipment.
The REALITY team members introduced the project to the interested audience at the dedicated booth and then commuted to the IMEC corporate booth in case of interest for demo's.
The IMEC corporate booth hosted a facility for press conferences and interviews with the press. IMEC's press officer Ms. Katrien Marent was available for interaction with the press.

One of the main reason's for the REALITY projectteam to participate with a dedicated booth at the renowned DATE '08 conference is the interesting mix of attendees: press, professionals and captains of industry.

Table 1 : DATE 08 Attendee Statistics

Total Registrations	**4700**
Conference	1420
Exhibition (Visitors + Exhibition Personnel)	3231
Press	49

Table 2 : Geographical Breakdown

Europe	**75%**
Germany	36%
France	9%
UK & Ireland	8%
Benelux	7%
Others	15%
North & South America	**19%**
M. East, India, Africa	**2%**
E.Asia & Australasia	**4%**

Poster
In order to explain the project in a snapshot to the interested audience and to attract the eye of the passing-by people a poster was prepared. This poster contained a brief overview of the project highlights.

11. Measurable Results from the PR action

Besides creating visibility to the general public and announcing the start of the REALITY project, a few more measureable achievements have been realized :

- 3 leads with industrial companies with a potential for starting bilateral projects
- Visibility on the consortium members and their collaboration
- Visibility on IMEC as a project coordinator
- Five parties (research institutes, universities and industrial companies) interested to keep contact and explore future collaboration in funded projects (e.g. FP7 Call 4 in 2008) with IMEC as a coordinator.

The leads with the 3 industrial companies have been explored further in the months after the exhibition. Without providing details, it can be shared that 2 of them are major semiconductor manufacturers (A-company and I-company) with R&D and manufacturing facilities in Germany. A third party is the major European contractor for Aerospace in Europe.

To support the PR activity from scientific perspective a few of the consortium members gave a (keynote) speech or lecture at DATE '08, during which a clear relation to and the contribution within the REALITY project was mentioned.

12. Additional PR Activities

To enhance the impact and to strengthen the PR activities, ***the REALITY project team decided to sponsor the ESSDERC 2008 conference.*** The aim of the ESSDERC conference is to provide an annual European forum for the presentation and discussion of recent advances in solid-state devices and technologies. It is a major event, attracting the key players in this area from academia and industry.
ESSDERC 2008 will take place from the 15th until 19th September 2008 in Edinburgh, UK.

More information can be found on the website : http://www.essderc2008.org/

Secondly, a lecture was given on May 6th by Mr. Miguel Miranda (REALITY WP leader) at the ***AENEAS workshop in Milano, Italy.*** This lecture explained in detail the objectives of the REALITY project, the consortium, the scientific challenges and potential results.
AENEAS (Association for European NanoElectronics ActivitieS) is a non-profit industrial association, providing a legal backbone to ENIAC – the European Nanoelectronics Initiative Advisory Council and consists of large amount of members from the semiconductor industry. The objective of the association is to ensure competitiveness of the semiconductor industry and its infrastructure in Europe.

13. Practice of the REALITY FP7 project

The following summary gives a brief overview of what the REALITY projectteam does and does not do. It is an evaluation of the PR activities practice at the project start and its use in this FP7 project :

- We do invest quite some resources and expenses at projectteam level to support the PR activities at project start
- We do have measurable results of the actions taken, in the form of realistic leads and potential collaboration cases.
- The PR activity gave a lot of visibility
- We had problems to explain in a comprehensive way the scientific challenges to the general public.
- We do not have a fully documented plan for local PR activities by each of the individual consortium partners.
- Future press releases at key events are not planned yet.
- The web based tool did not give the expected visibility and promotion for the PR events.

