

Design for Manufacture Summit at Lancaster University, 2-4 Oct 2007

A "Big event" for "Small Systems" was the headline that appeared in the press release from UK journalists covering this event. In the context of the events diary across the globe, 84 delegates can hardly justify labelling this event as "Big", but for the delegates this was indeed a highly significant meeting as it formed the main showcase for the technical work carried out within the FP6 Network of Excellence in Design for Micro & Nano Manufacture (PATENT-DfMM).

This 3-day conference aimed to pull together the technical research work initiated by the PATENT-DfMM project. This included work fully supported by the project and activities stimulated by the NoE through both partial funding, feasibility projects and mobility.

The presentations delivered were clearly rich in terms of engineering research outputs, associated with new concepts for embedded test and packaging technologies, reliability engineering and demonstrator-focused activities. The majority of the presentations provided the audience with examples of how collaboration between conventionally isolated disciplines could deliver major benefits. Specific examples here were evident around new application-focused work that has been launched by the NoE in the fields of Health and Usage Monitoring (HUMS) and Micro Electro Fluidics (MEF). In the case of MEF, fluidic modellers, test engineers and system-on-chip designers have collaborated to deliver concepts around chip-based digital fluidics that feature active de-

vices operating across the electronics to Biology interface.

Presentations that the organisers have been given permission to distribute are available from www.patent-dfmm.org. A number of contributions from related activities, in particular the UK 3D-Mintegration (www.3d-Mintegration.com) and IeMRC (www.ieMRC.org) projects were integrated into the program to provide cross-fertilisation between the NoE and these national programs.

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DfMM Service Cluster Update

Over the past 18 months, the PATENT-DfMM NoE has been assessing the potential of six key areas of activity for commercial roll out. The final selection meeting took place in September 2007 and provided a mandate and budget for the development of the following two clusters:

HEALTH AND USAGE MONITORING MICROSYSTEMS (μ HUMS)

A technical cluster led by the Institute for System Level Integration, Scotland, offering:

- Feasibility studies on embedded μ HUMS solutions / systems where diagnostics, prognostics or condition monitoring are required.
- Access to extensive information databases and consultancy on methods to achieve on-line test, fault tolerance and diagnostic capabilities.
- Design services for μ HUMS sensors using silicon and non-silicon based micro technology and both electrical stimulus generation and response processing.
- Prototyping facilities based on silicon, ceramic or flexible substrates as well board-based solutions.

The cluster involves Heriot-Watt University, Lancaster University, Budapest University of Technology and Economics, and BCF Designs.

European Microsystems Reliability Service Cluster (EUMIREL)

A cluster of experts offering consultancy, training and reliability analysis services, led by four key service hubs IMEC, IMT Bucharest, Polytechnic of Milan and Fraunhofer IMS, supported by 4M2C in marketing and coordination. Eumirel is offering the following services:

- Consultancy: Design for Reliability, Physics of failure, Test structures, FMEA studies, Reliability test strategies.
- Training: Failure Analysis techniques, Accelerated Life Testing, Reliability Assessment, Failure Modes and Physics of Failure.
- Reliability analysis: Accelerated Reliability Test, Qualitative Life Testing, Functional Test, Failure Analysis, Test Structure Design.

The cluster offers access to a wide range of equipment and facilities together with a database for matching the needs of clients to specific capabilities within partner facilities. In addition to the lead partners mentioned above, the team includes CSL Liege, Warsaw University of Technology, Budapest University of Technology and Heriot-Watt University plus key industrial reliability service providers.

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The NoE Patent-DfMM aims to establish a collaborative team to provide European industry with support in the field of "design for micro nano manufacture" to ensure that problems affecting the manufacture and reliability of products based on micro nano technologies (MNT) can be addressed before prototype and pre-production.



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