



Design for Micro & Nano Manufacture (PATENT-DfMM) Engineering Services

www.patent-dfmm.org

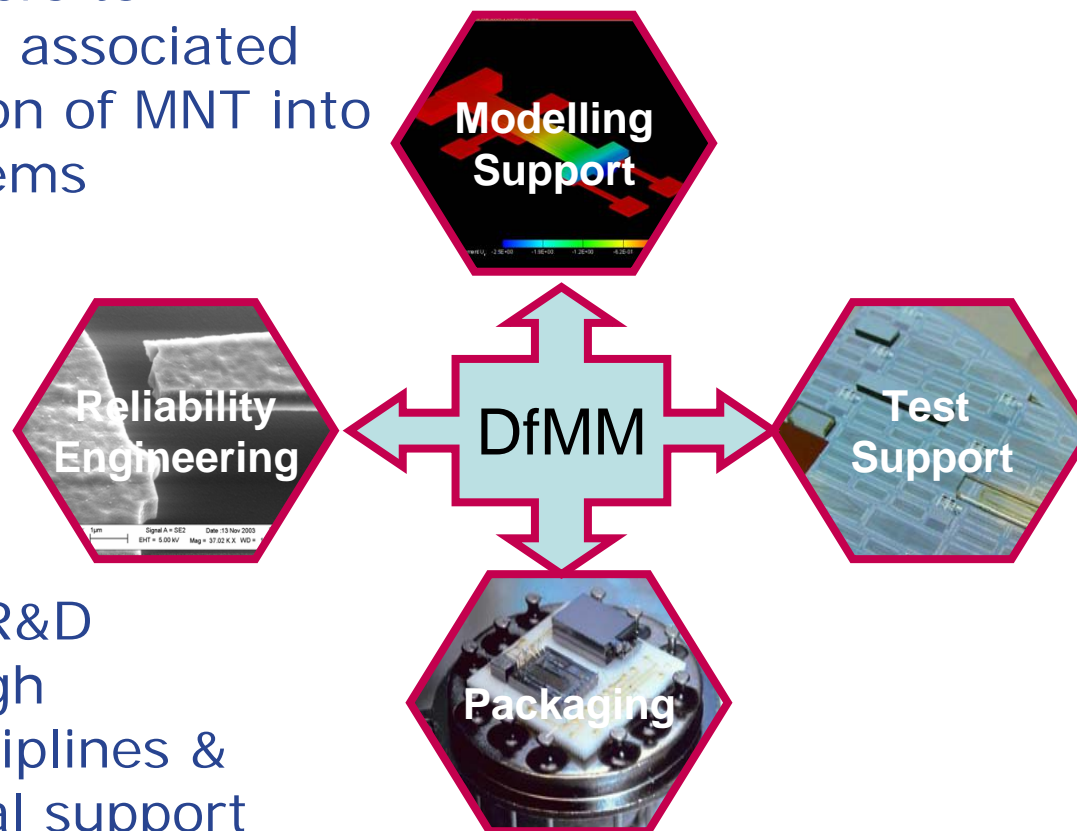
Prof. Andrew Richardson – Lancaster
University
(coordinator)

Dec-07

«Design for Micro & Nano Manufacture (NoE PATENT-DfMM)»
Network of Excellence funded by the European Commission (EC FP6: IST, Unit C2, Contract 507255)

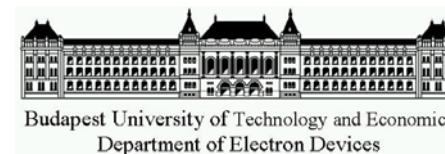
□ Motivation

- Address key barriers to commercialisation associated with the integration of MNT into miniaturised systems



□ Goal

- Re-structure the R&D community through integration of disciplines & Launch a industrial support service



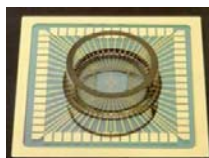
- Chairman: Alistair Sutherland, BCF Designs

- Members:
 - **Tools (EDA)** : Coventor, Dolphin Integration, SoftMEMS, Flowmerics.
 - **System Integrators** : Philips, Alcatel Space, NXP, Infineon / Sensorior, ST Microelectronics, BAE Systems, Renishaw, EPIGEM.
 - **Component & Design Houses** : MCE, IMEGO, Oxley, Colibrys, BCF Designs, Novamems, LioniX
 - **Equipment Providers** : SUSS MicroTec AG, Polytec GMBH,
 - **Consultants** : P & A Europe, Enabling 3M

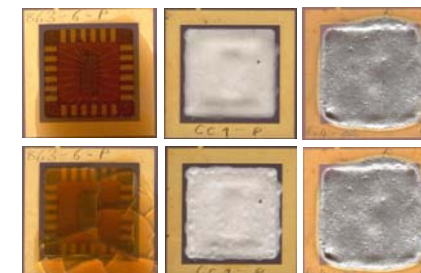
- The IAB is coordinated by Patric Salomon 4M2C

- Year 1
 - Strengthen collaboration between experts in 4 key disciplines
- Year 2
 - Initiate cross-disciplinary actions, put in place teams able to address key industrial challenges
- Year 3
 - Focus new teams on demonstrators and key challenges (Flagships)
- Year 4
 - Role capability out to industry – attempt to achieve a degree of sustainability

- BioDROP: Addresses Health Monitoring, Test & Reliability in drug discovery and synthesis platforms
 - MESA+, ULAN, QinetiQ, CCLRC, LIRMM, Pepscan, MultiSynTech,

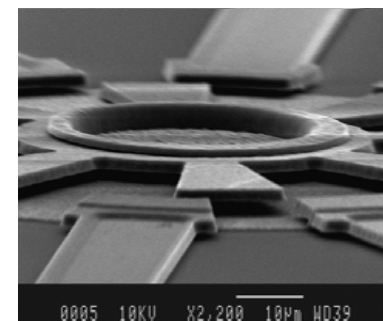


- Reliability Cluster : activities in accelerated ageing (RELMETH), Vibration & shock in harsh environments (VIBSHOCK) and humidity / hermeticity monitoring (HERMETICITY)
 - Tyndall, IXL, IEF, LAAS, LIRMM, QinetiQ,
 - BUTE, IMT, POLIMI, CEA-LETI, ULAN

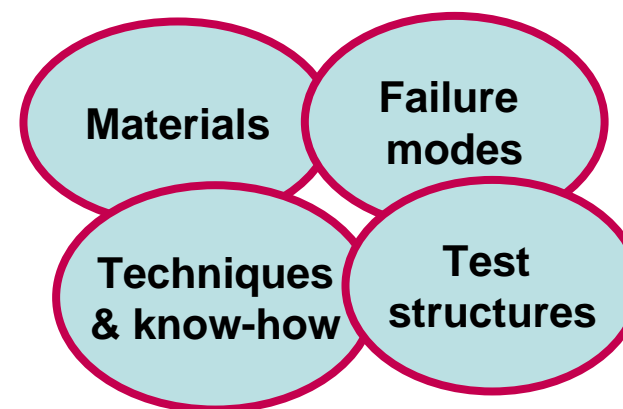


- HUMS (Health and Usage Monitoring MicroSystems)
 - HWU, ULAN, LIRMM, BUTE, ISLI, BCF Designs

- ❑ Accelerated Life Testing (ALT),
Identification of Reliability Indicators
- ❑ Functional Testing in different
environments
- ❑ Electrical & Environmental Reliability
Testing:
- ❑ Failure Analysis
- ❑ Test Structure Design
- ❑ Consultancy & Training
- ❑ 6 core partners including
 - IMEC
 - Fraunhofer IMS
 - Budapest University of Technology &
Economics
 - Heriot Watt
 - IMT (Bucharest)
 - CSL (Leige)
 - WUT (Poland)

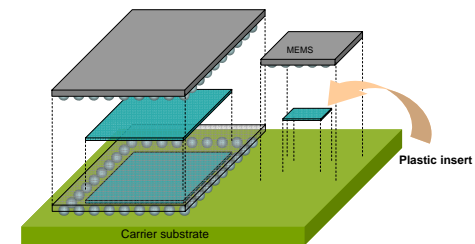


FMEA work on a range
of MEMS devices

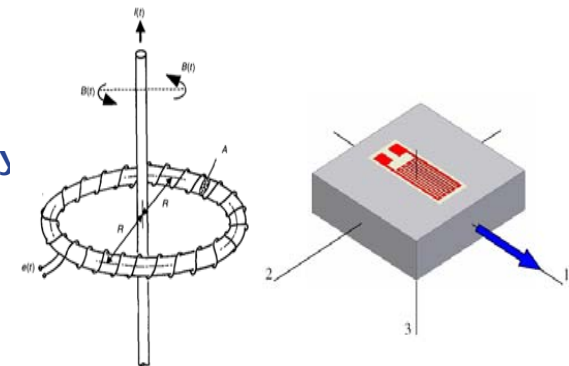


Access to an dedicated
extensive database

- Miniaturised HUMS units containing sensors & on-line test functions
- Library of MEMS and Electronic self-test functions for bespoke HUMS
- A Cluster of experts :
 - Heriot Watt University, Lancaster University, BCF Designs, [ISLI](#) and BUTE (Uni Oulu invited)
- Services
 - Feasibility studies on embedded HUMS solutions systems where periodic or continuous diagnostics or condition monitoring is required
 - Access to extensive information database and consultancy on methods to achieve on-line test, fault tolerance and diagnostic capabilities.
 - Design service for HUMS sensors based on microtechnologies (temperature, stress, humidity, EM fields etc) and electrical self-test functions
 - Prototyping facility (silicon and board based)

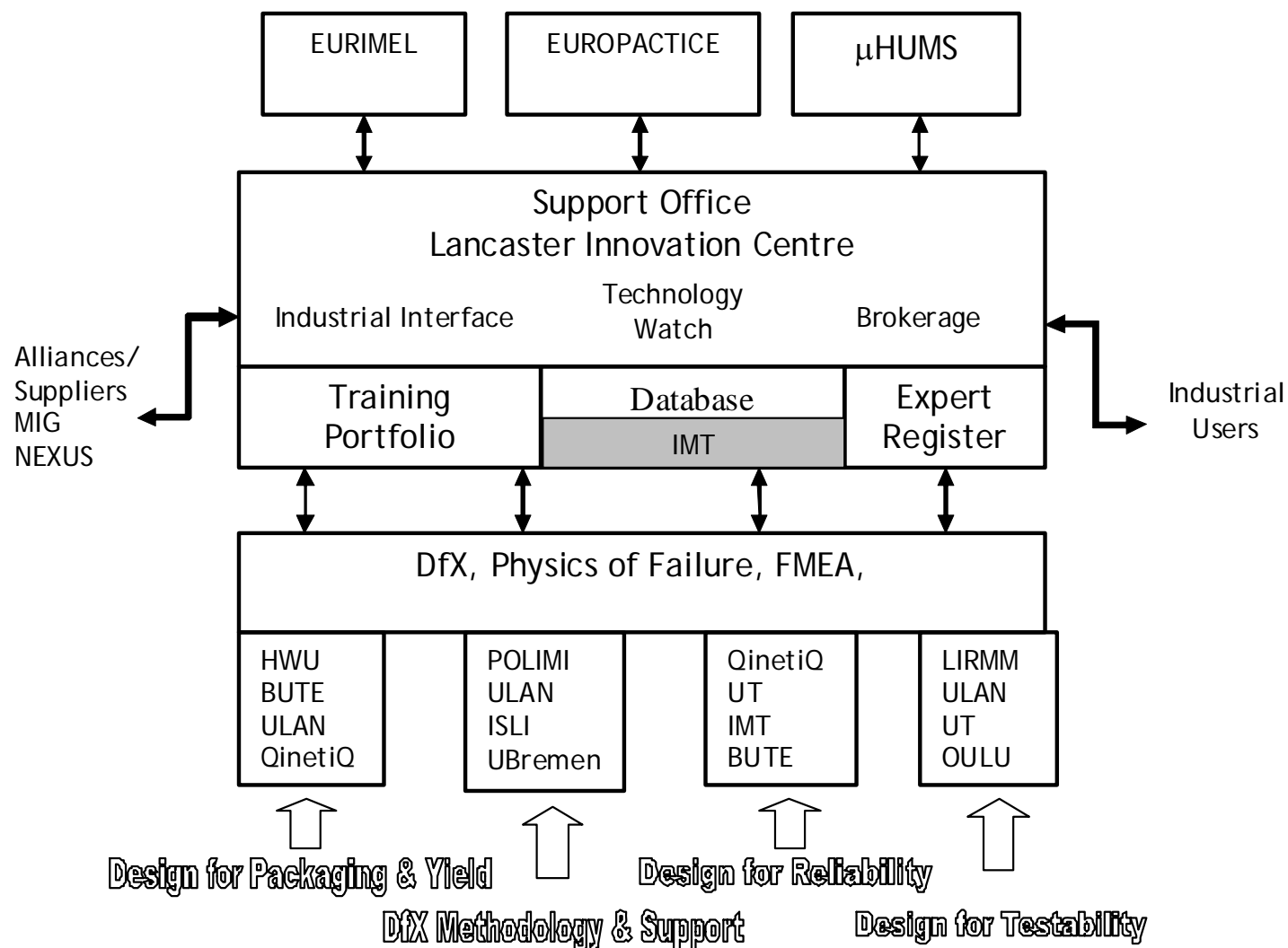


Integration into SiP systems with Philips Semiconductors



Microsensors for aircraft wiring monitoring – UK AiGT

PATENT-DfMM Support Structure : 2008





The screenshot shows the homepage of the DfMM website. At the top left is the DfMM logo with the text 'NoE PATENT'. To its right is the text 'European Network of Excellence' and 'Design for Micro & Nano Manufacture'. A navigation menu includes links for Home, Partners, Research Projects, About, Contact, Site Map, Search, and Go. The main content area features a central graphic with the text 'The Powerhouse for Engineering Design in Micro & Nano Systems' surrounded by five circular icons representing different services: Flagship Programmes, R&D Outputs, Publications & Patents, Design & Engineering Services, Knowledge Database, and Training. On the right side, there are two sections: 'Showcase' with a paragraph of placeholder text and two small images of microstructures, and 'Latest News' with a paragraph of placeholder text and a small image of a microchip.

