

MMA

Microsystems Manufacturing Association

Introduction to the MMA

The Microsystems Manufacturing Association



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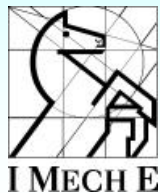
Microsystems Manufacturing Association

The MMA has been formed to:

**Encourage commercial exploitation of microsystems technologies (MST)
by UK industry.**

**To achieve this, the MMA seeks to provide a strong and representative voice
at national and international level.**

Representing the interests of both suppliers and consumers of MST.



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What is the need for the MMA?



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Foreign Government Investment in MST Research & Development

Japan

- 1991 - MITI large-scale effort on MST - \$250 million over 10 years.
- 1995 - \$110 million.

USA

- 1995 - \$130 million.

Germany

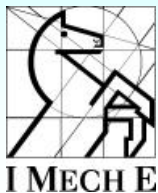
- 1990 - 1999 - BMBF funded projects - \$53 million p.a.
- 1999 - 2003 - BMBF Mikrosystemtechnik 2000+ - \$53 million p.a.

France

- 1993 - \$11 million.

Switzerland

- 1992-1995 - M²S² - Micro Mechanics on Silicon In Switzerland - \$5 million
- 1996-1998 - MINAST - \$26 million p.a. for 3 years.



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Market Forecast for MST

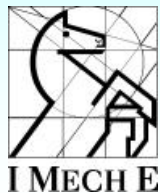
- **\$ 38 billion by 2002**

It is not just the value of the MST market that is important, but also the economic impact MST has across manufacturing, the medical field, and defence.

Additional annual sales of nearly

- **\$100 billion**

in new or improved industrial and medical systems have been achieved through the use of MST devices.



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UK

The UK has had NO centralised strategy to support MST development.



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Comments

- **High level of investment, commitment and competence in Japan, USA, France, Germany and Switzerland**
- **Significance of national infrastructure, and lack of it in the UK**
- **Significant role of government capital and revenue**
- **Co-ordinated approach in Japan, USA, France, Germany and Switzerland
- disparate approach in the UK**



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MST in the UK

- **Most ASIC manufacture has to be done outside the UK**
- **Lack of teaching and infrastructure in the UK**
- **UK needs a forum to promote microsystems**
- **UK needs a national microsystems facility**



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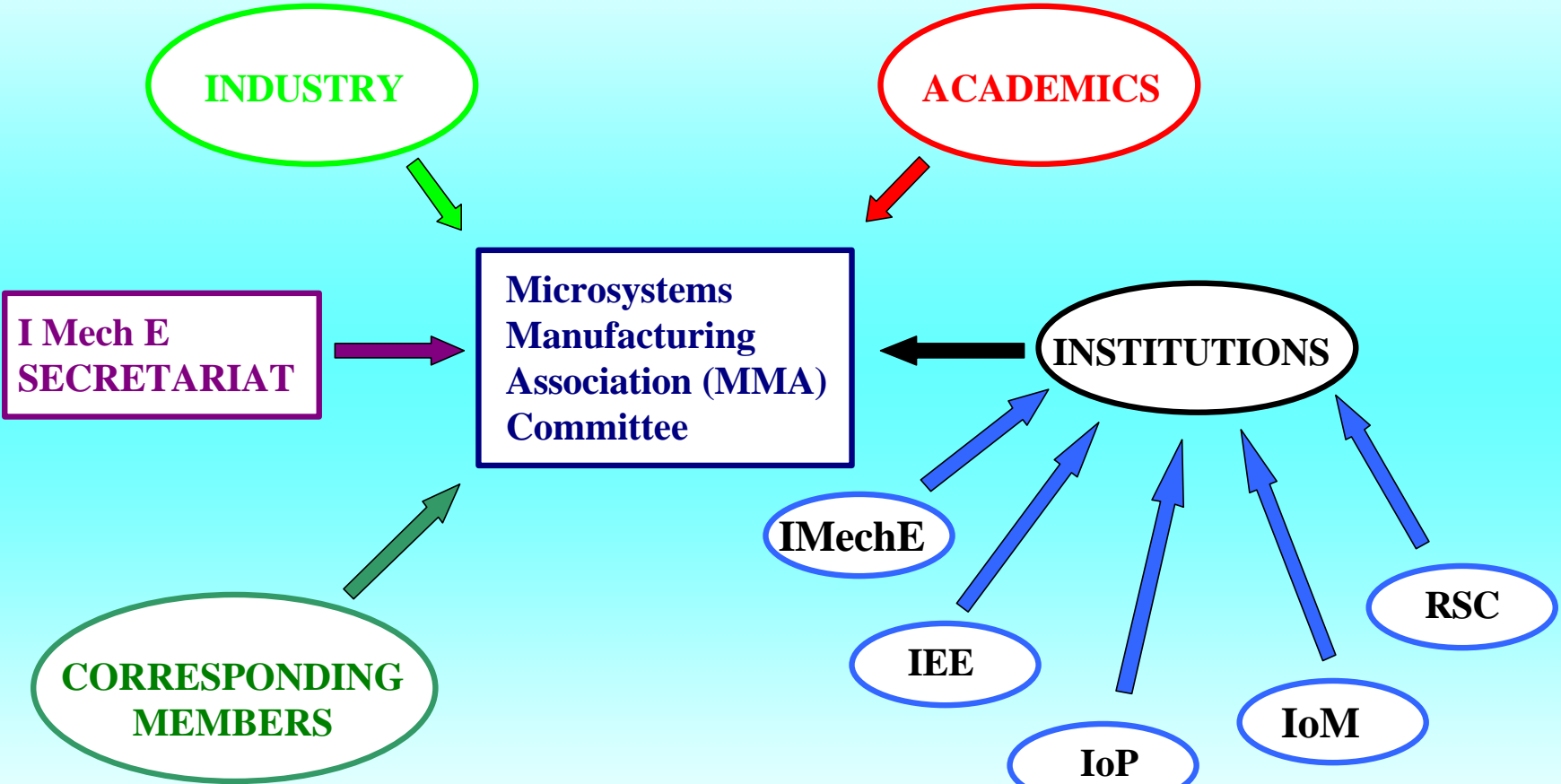
Conclusions

- **Significance of industrial collaboration**
- **Significance of creation of spin off companies from research activities**
- **Significant potential for collaboration with organisations / companies in other countries**



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Interim Committee Members

Hugh Clare

David Allen

Geoff Beardmore

Ian Hopkin

Ken Wittamore

Mike Ward

Rob Turner

Bob Carr

Michael Perry

John Ling

Unilever

Cranfield

Smiths Industries

BAE

PERA

Birmingham University

KBIC

Macranal

Michael Perry Associates

IMechE



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MMA Action Plan

- Survey of MST in the UK ★
- Links to other MST related groups in the UK ★
 - Virtual UK MST organisation ★
- Network of Centres of Competence and Manufacturing Clusters
 - Electronic news letters / news items
- Carry out market survey of MMA requirements
 - Establish web site ★
 - Establish database of information
 - Organise public meetings ★



PERA



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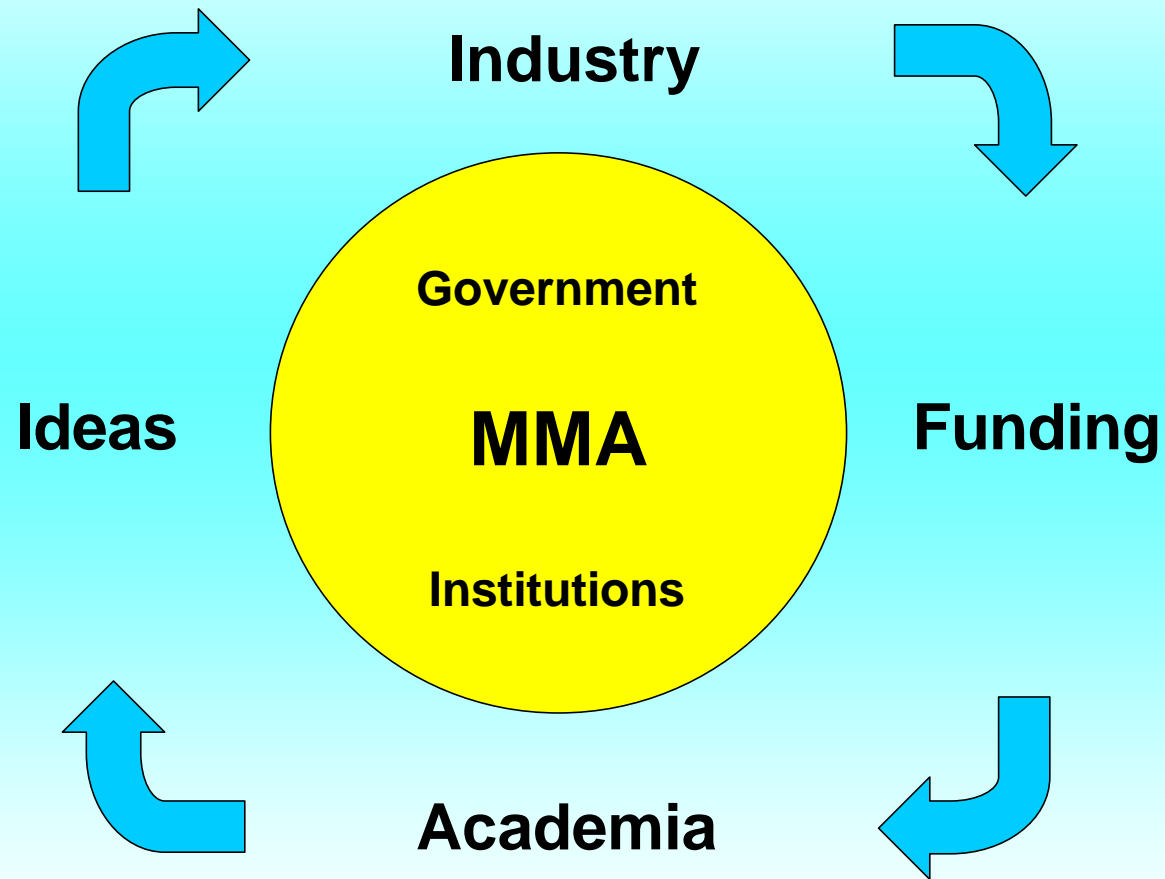
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MMA Action Plan (continued)

- Carry out gap analysis
 - Lobby Government ★
- Establish links to MST projects ★
 - Sponsor research
- Production of training packages
 - Production of standards
 - Awareness articles in journals ★
- Publications in scientific journals
 - Dissemination of training packages



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By operating within a virtuous circle of

- **industrial**
- **academic**
- **governmental partners**

and

by means of a policy of inclusion and collaboration

**the MMA will work to ensure that
UK companies have access to competitive sources of MST technologies.**



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UK Strategy for MST

Activities should be focused on UK manufacturing strengths. These cover areas where the UK could establish very lucrative world-wide markets, and includes:

- **pharmaceuticals**
 - **medical**
 - **biotechnology**
 - **military**
- **communications,**
- **fast moving consumer goods**
 - **chemicals**
 - **aerospace.**



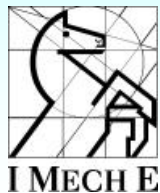
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www.mma.org.uk



A DTI Biotechnology Exploitation Platform (BEP) Project

Bio-

THRmST
BIO-applied microtechnology

Transferring

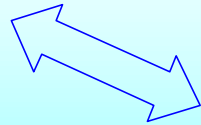
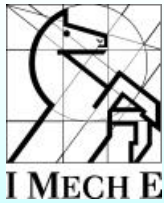
Hybrid

Research to

m-micro

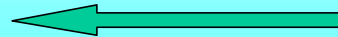
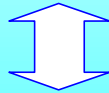
Systems

Technology Industries



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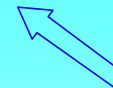


BEP
Biotechnology
Exploitation
Platform

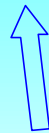


Bio-

THRmST



DERA



University of Leeds
ORCHYD

Institute of Nanotechnology

Bio-THRmST

Academic Technologies

- DNA/Protein multi-array chips
- combinatorial chemistries
- single molecule detection
- near-field optics
- In-situ chem synthesis single multichannel chip
- chip-level GC
- chip level fermentor systems
- rapid cell analysis and separation systems
- nano-particle drug delivery systems
- ultra-high sensitivity, high res. and high speed separation and analysis
- microfluidics, micro-CZE
- micro-electrophoretic and dielectrophoretic phenomena

Industrial expertise and capabilities

Design and high volume Fabrication for

- silicon wafer processing,
- LIGA
- e-beam and UV lithography,
- polymer m-embossing,
- stereolith,
- laser photo-ablation

Materials

Packaging

I/O

Data analysis and management

Volume Manufacture

BEP

Industry compatible design and materials

Volume Production Quality Market focussed

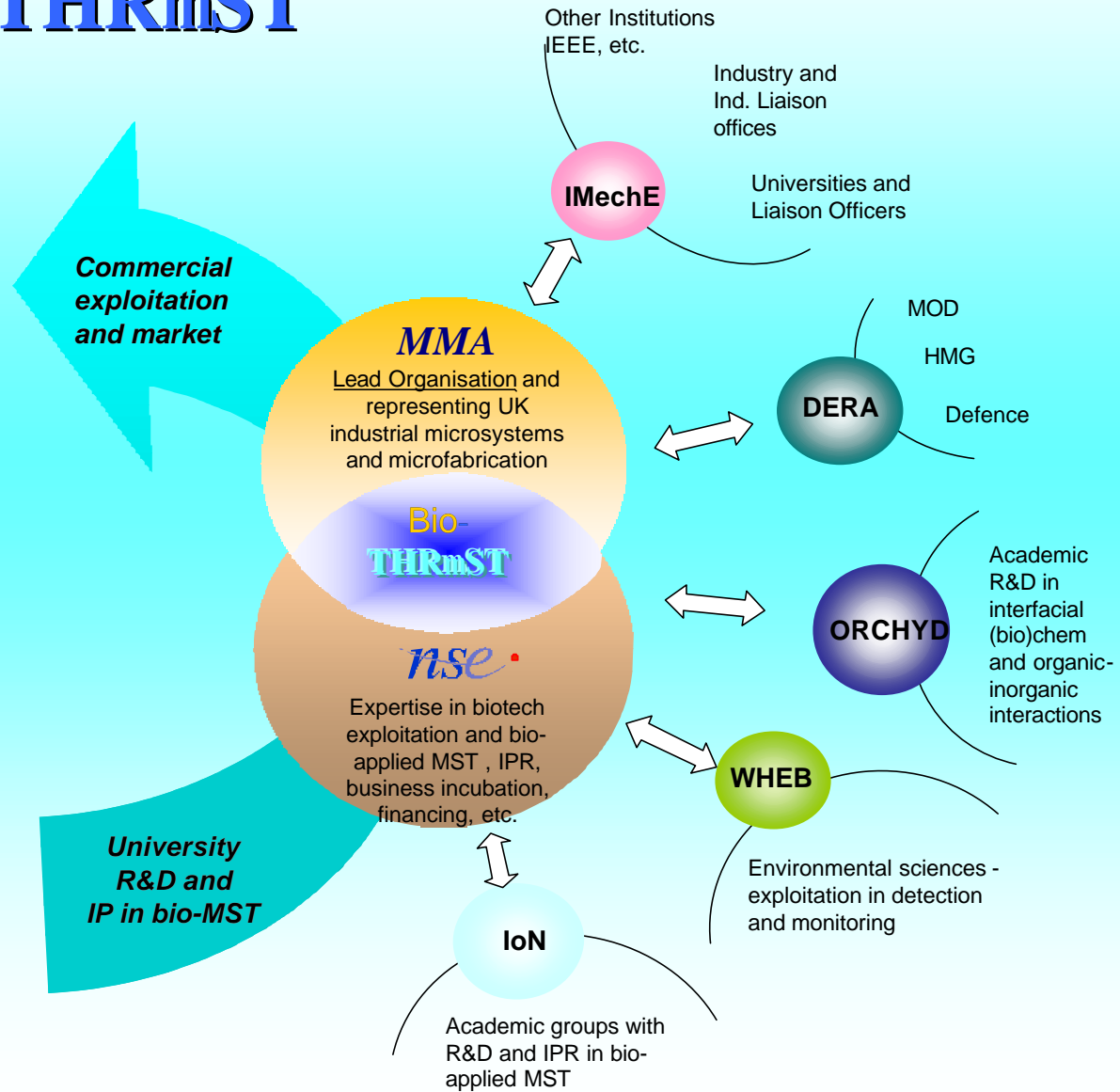
**Immunodiagnosics : clinical chemistry : healthcare : biopharm/drug development :
forensics : food : environmental : medical : etc..**

Bio-THR_mST

Aims

- Accelerate commercial exploitation of UK academic IP in biological applications of MST
- Establish barrier-jumping links between academic bio-MST R&D and large-scale m-device manufacturers.
- Get MST manufacturers involved earlier in UK academic bio-MST R&D
- Stimulate additional innovation and IP through such interactions
- Get UK microsystems manufacturing industry to undertake manufacturing role in bio-MST
- Information conduit
- Get bio-MST R&D and m-fabricators exploring new devices and systems aimed at new applications and markets.

Bio-THRmST



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BIO-THR_mST BEP Consortium Members

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NSE

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The ORCHYD Network (University of Leeds)

Institute of Nanotechnology

Web Partnership

