

MEMSLand

Closing Symposium

Jan Eite Bullema

(3-12-2009)

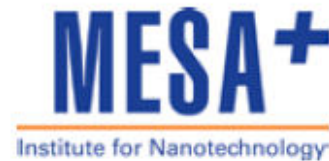
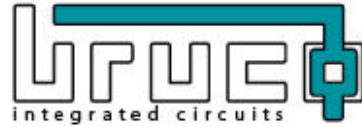
TNO | Kennis voor zaken



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Closing Symposium MEMSland



The Objective of MEMSland

The objective of the MEMSland project, as part of the Point One program, was to develop and integrate all key competencies and technologies needed for the development of a comprehensive MEMS packaging solution. Cooperation on a national scale will be needed to achieve cost effective options for new MEMS device creation.



What was the MEMSLand program?

The MEMSLand program has been a Point-One project of ± 36 Million Euro

22 Partners, Large companies, SMEs, Universities and research institutes

Main aim was to make breakthroughs in the field of MEMS packaging,
the main obstacles for MEMS commercial successes

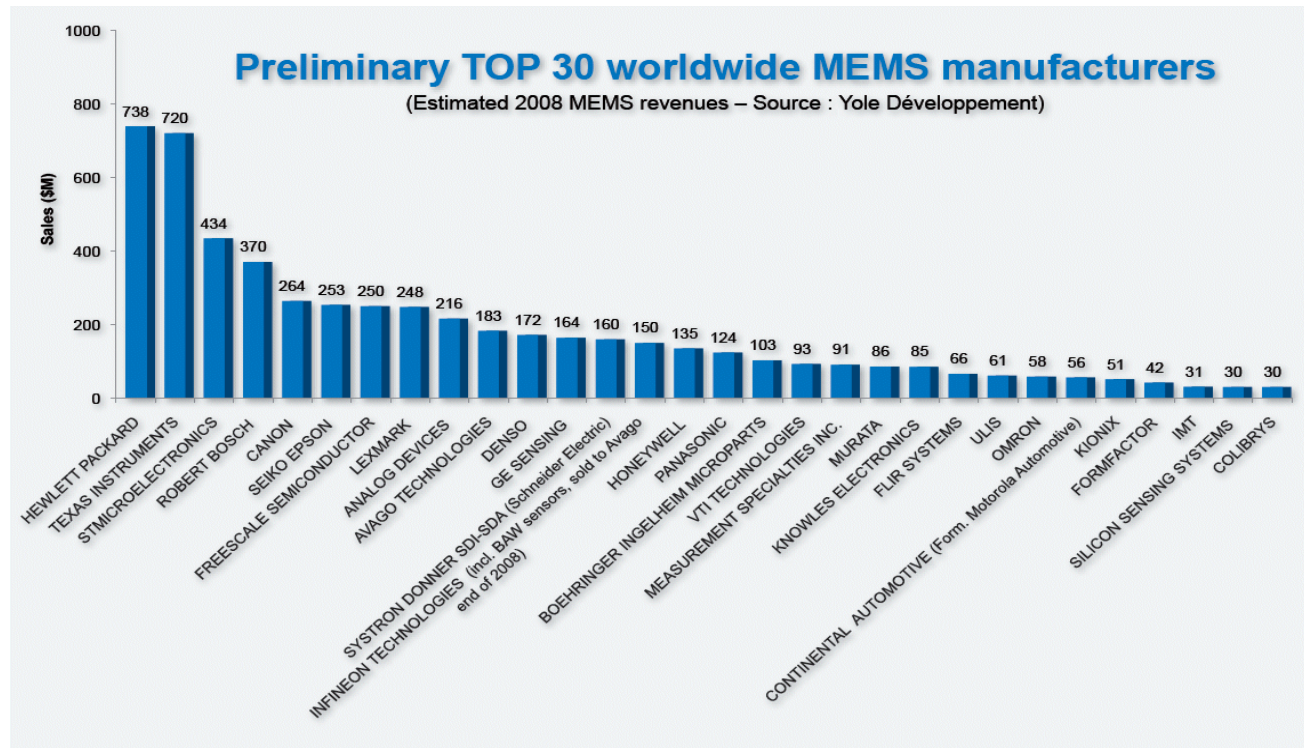
MEMSLand was organised along Business Carriers and Demonstrators
of the partners



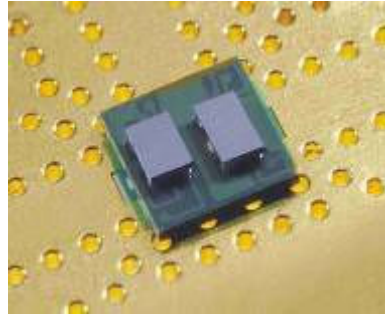
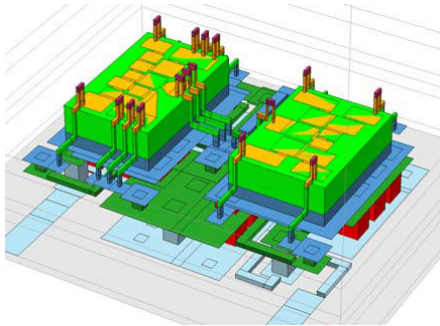
MEMS in Economic Perspective

The microelectromechanical systems (MEMS) market will hit \$10B by 2011, doubling from its estimated 2005 revenues of \$5B

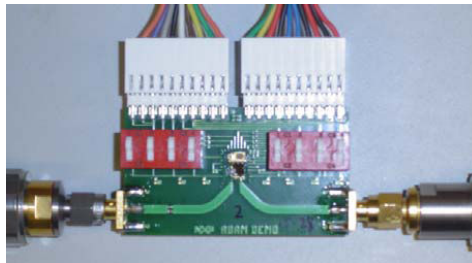
Semiconductor Partners (Phoenix), 9/11/2007



Business Cases and Demonstrators (1)

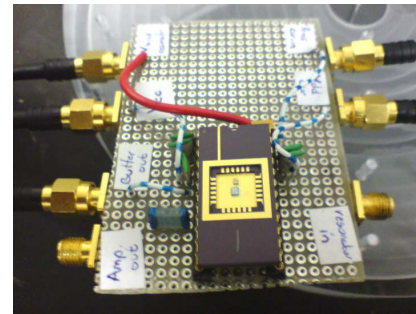


BAW Filter, used in wireless (mobile phone) potential use replacing SAW Filters

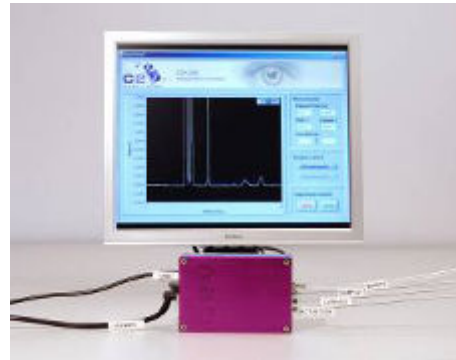
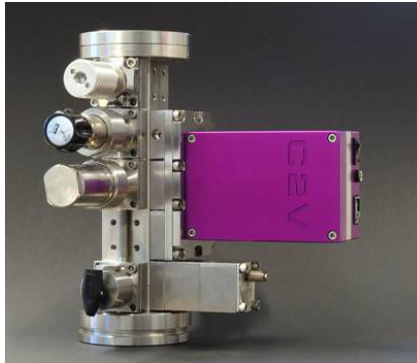


RF Switch used in wireless (mobile phone) allowing tunable RF systems for optimal bandwidth and reduced size

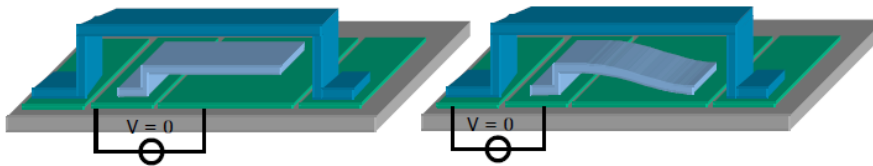
MEMS oscillator replacing quartz oscillators ($4 \times 10^9/a$)
Improved performance
at lower costs



Business Cases and Demonstrators (2)



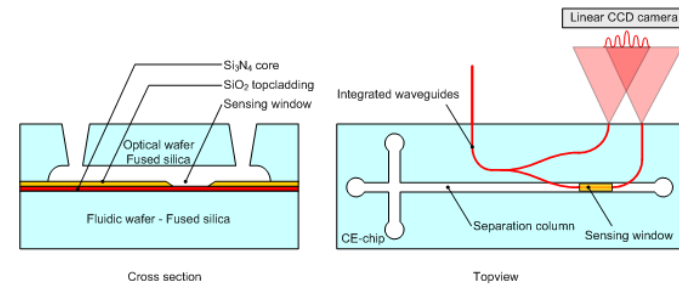
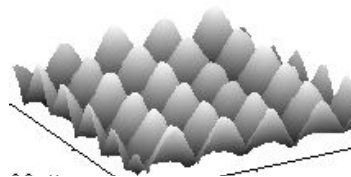
Micro GC, enabling low cost in the field Gaschromatography



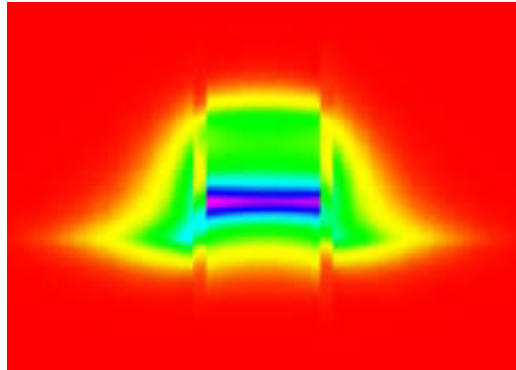
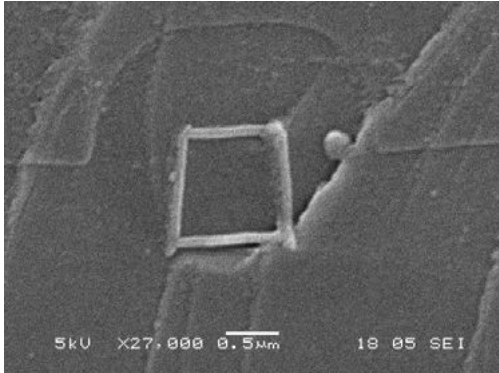
Non volatile Memory

Low (or no power) power

Optical sensor for microfluidics

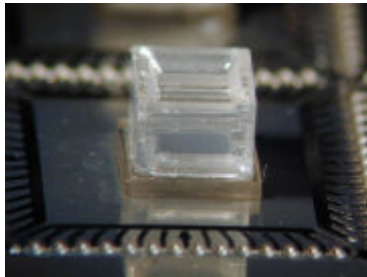


Business Cases and Demonstrators (3)



Optical splitter (triplet technology)

Fiber to the home application



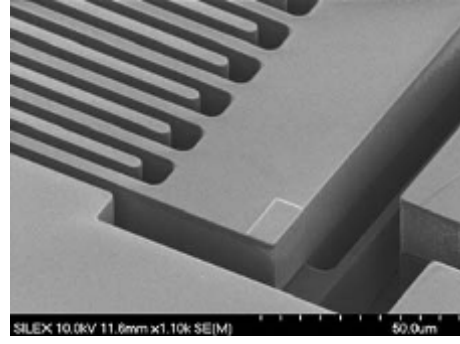
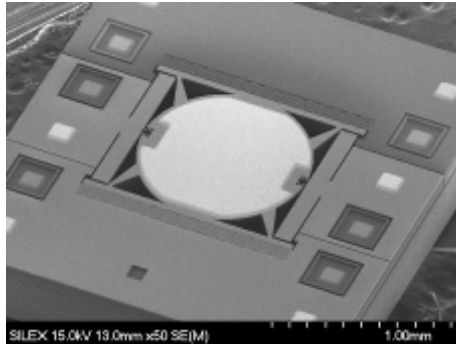
Mini camera

potential < 1 USD / camera

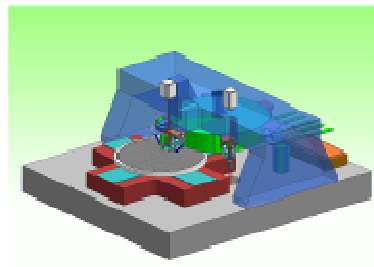
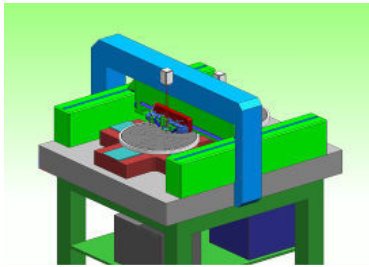
Fingerprint sensor



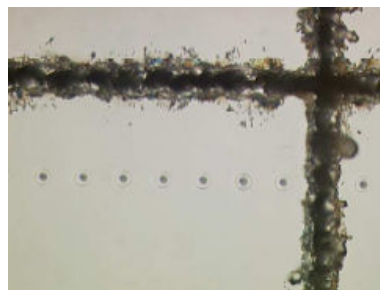
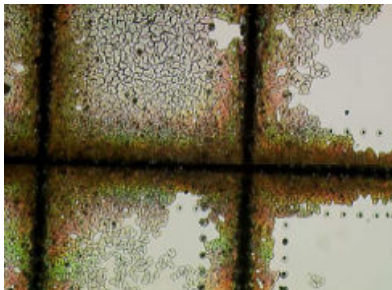
Business Cases and Demonstrators (4)



Scanning Mirror
head-up display
micro-beamers



Large Area Micro Assembly
Machine
1 micron accurate per 1 s



Laser dicing of chips

Program MEMSland Closing Symposium

- 09.00 - 09.25 Reception and coffee.
- 09.25 - 09.30 Welcome, program and rules of the house,
Jan Eite Bullema, TNO
- 09.30 - 10.00 The role of MEMSland in Point-One,
Fred van Roosmalen, vice Chairman Point-One
- 10.00 - 10.30 4 years of MEMSland: what did we set out to reach
and what did we achieve?,
Peter Magnée, NXP, Program manager of MEMSland
- 10.30 - 11.00 Coffee break.

Coffee will be served in the adjacent room

Program MEMSLand Closing Symposium

- 11.00 - 11.30 Smart RF with MEMS capacitive switches,
Marcel Giesen, Epcos
- 11.30 - 12.00 Anteryon's WaferOptics® technology,
Koen Demeijer, Anteryon
- 12.00 - 12.30 A gas analyzer instrument based on integrated micro
GC technology
Vincent Spiering, C2V
- 12.30 - 13.30 Lunch

Lunch will be served in the adjacent room

Program MEMSLand Closing Symposium

- 13.30 - 13.50 Liquid Metal Alloy Interconnects for 3D Chip Stacking
Erik Veninga, TNO
- 13.50 - 14.10 MEMS Mirror for miniature laser projection
Diederik van Lierop, Philips
- 14.10 - 14.30 MEMS oscillators for frequency reference and timing
applications,
Joost van Beek, NXP
- 14.30 - 15.00 Tea Break

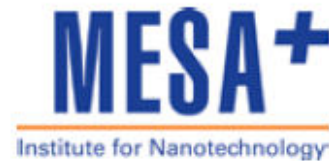
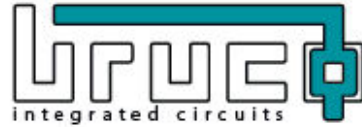
Tea will be served in the adjacent room

Program MEMSLand Closing Symposium

- 15.00 - 15.30 BlueBird: The next step in packaging
Patrick de Jager, TNO
- 15.30 - 16.00 MinacNed: The challenges of
Public-Private cooperation
prof. Fred van Keulen, TUD
- 16.00 - 16.30 Panel discussion.
Chair: Jan Eite Bullema
- 16.30 - 18.00 Networking event

*The TNO building is a non smoking building
It is not allowed to explore the TNO building by yourself
The TNO building closes at 18.00
If you are by car: don't forget your 'uitrijkaart'*

Closing Symposium MEMSland



MEMSLand



Forum Discussion

MEMSLand had the ambition to create 5000 new High Tech jobs
In the Netherlands in the field of MEMS in 2011.

Despite the economic down turn due to the 'credit crisis'
MEMS technology still has the potential to enable new products
for new and existing markets.

**MEMS technology can create substantial numbers of High Tech
jobs in the Netherlands**

Agree or disagree?

Forum Discussion

What do we need in the Netherlands, to make the MEMS business more than a Dutch academic succes number

- * More subsidies?
- * Better technologies?
- * New product ideas?
- * Open innovation?
- * Other.

Make and motivate you choice

Forum Discussion

A Dutch Open Innovation institute, based upon the MEMSLand model of Business carriers coupled to technology developments is necessary to come to valorization of MEMS technology.

Create an Institute to pull science out of the lab => into new products.

Agree or disagree?

Forum Discussion

If *'Sinterklaas'* would decide to give us funding for a MEMS Open Innovation institute.

The best location for a MEMS Open Innovation would be:

- * High Tech Campus in Eindhoven
- * MESA+ in Enschede
- * NovioTech in Nijmegen
- * DIMES in Delft
- * A distributed open innovation institute.
- * Other

Make and motivate you choice

Forum Discussion

We should work together to make MEMS business more successful

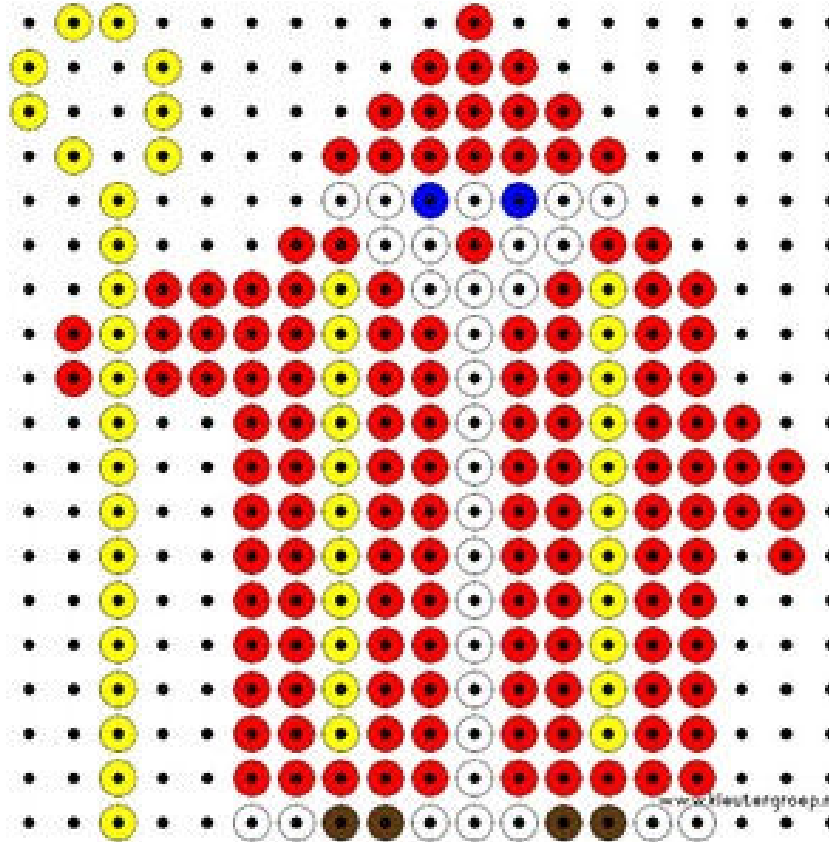
- * Big companies,
- * Small Companies (SME)
- * Start ups
- * Universties
- * Research Institutes

Subsidies are required for this kind of cooperation..

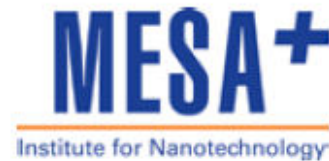
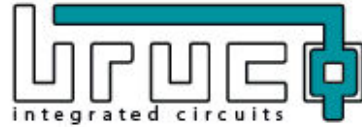
Agree or disagree?

Thank You very Much for your participation

Networking event.



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MEMSLand



More information: www.memsland.nl



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