

MEMS-ID PTY LTD

RFID in Health

24 November 2005

Mems-ID – the next generation of RFID technology

Mems-ID Pty Ltd – the company

- Privately held Australian company
- Founded in May 2003
- Developing Mems-ID “chip” – core component of RFID system
- With strategic partners – develop “end-to-end” RFID solution
- Major activities over last 2 1/2 years
 - Developed mems-ID concept
 - theoretical studies and computer simulations
 - building bread-board demonstrator
 - Identified technical and commercial strategic partners
 - Set up operations at MiniFAB, Scoresby, Victoria
 - Open access Microtechnology Bio R&D facility
 - Filed National Phase patent applications
 - Raised capital to enable production of demonstration system

Management team

- **Dr. Mike Murray, Chairman**
 - Materials Scientist
 - 31 years development, technology commercialization & senior management experience in advanced technologies at CSIRO
- **Fraser Clayton, CEO**
 - Engineering & Business Management
 - 27 years international experience in technology enterprises
- **Dr. Ron Zmood, Founder & CTO**
 - Electrical Engineer, PhD in Control Engineering
 - 38 years international experience in technology development
- **Brett Schwarz, Founder, COO & CFO**
 - Chartered Accountant
 - 15 years experience in business management & development
- **Peter Francis, Director**
 - Lawyer, Founding Partner of FAL
 - Extensive commercialisation, ventures & IP law experience

Dr. Ron Zmood

- International expert in **Micro Electro-Mechanical Systems (MEMS)**
- Inventor of Mems-ID technology
- International experience at managing complex R&D projects
- Track record of delivering commercial projects on time & budget

Limitations of existing passive RFID

	WISH LIST	PRESENT CAPABILITIES
Memory capacity	Infinite	~ 100 bits
Intelligence	Infinite	Limited functionality
Read range	Infinite	Limited HF < 0.5m, UHF 1 - 2m
Environmental	Works anywhere	Limited temperature range Works poorly with metals and liquids
Cost	Zero	≥ US 20 cents Difficult to build business case
Availability	Yesterday	Today/tomorrow



Impact of present technology

- Slow adoption of available technology
 - Mainly at pallet and carton level **NOT** at item-level
- Suppliers reluctantly complying with RFID user mandates
 - “Slap-and-ship” solutions used
- Diminished productivity and loss of visibility in supply chain
 - Manual scanning still required
 - Human error
 - Poor inventory control
 - Loss of sales

Mems-ID solution

Core platform technology

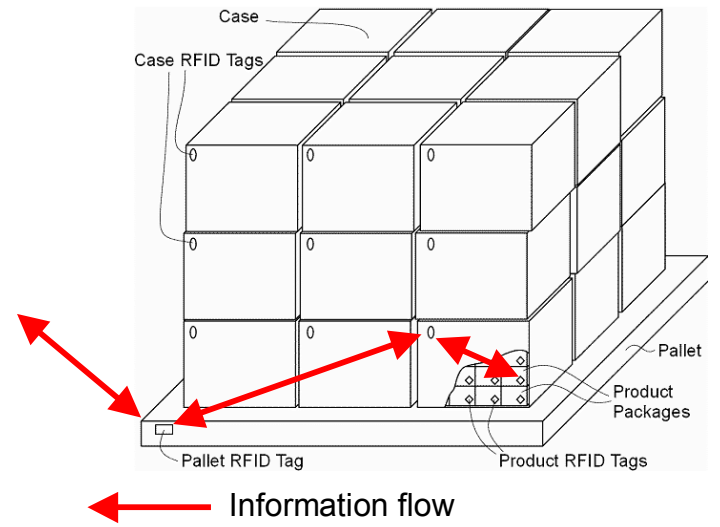
- Covers
 - Programming and storing data on RFID tags
 - Fabrication of RFID tags
 - Passive devices
 - memory
 - temperature sensing

■ Mems-ID RFID system includes

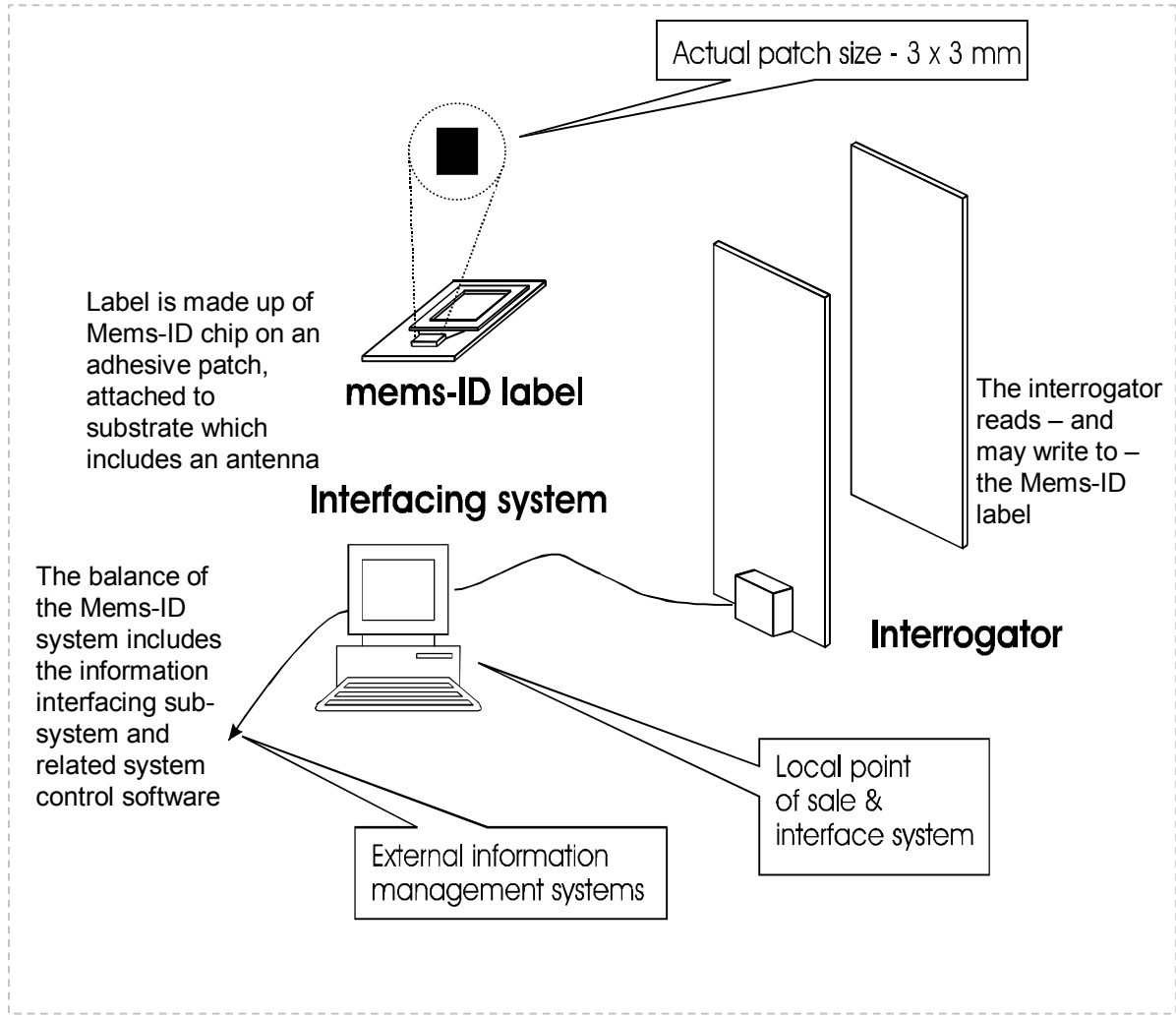
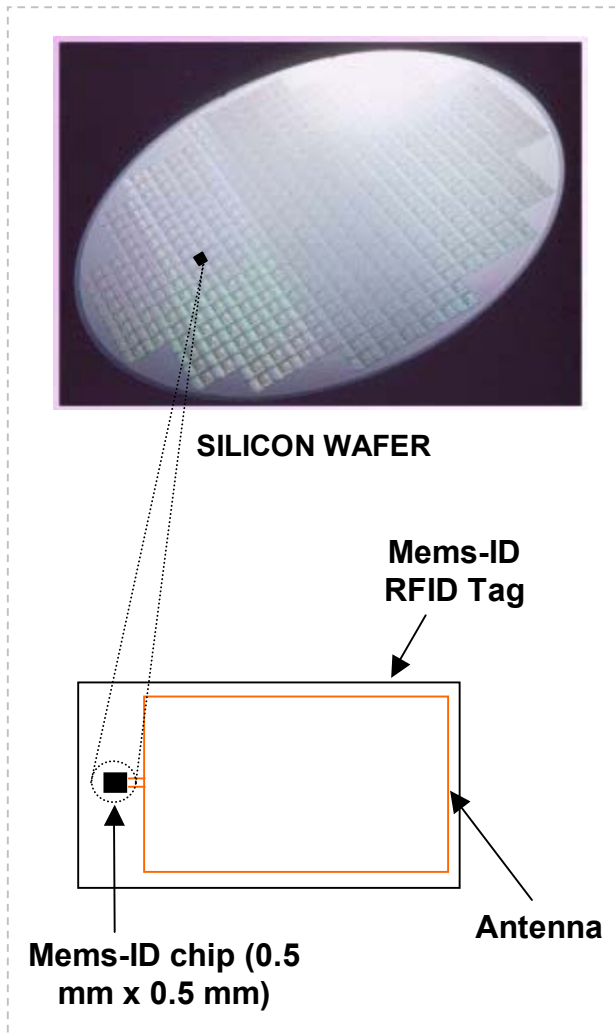
- RFID tag/label
- Interrogator/antenna system
- Interfacing system

■ Enable application of RFID technology where currently **NOT**:

- Physically or technically possible
- Commercially feasible

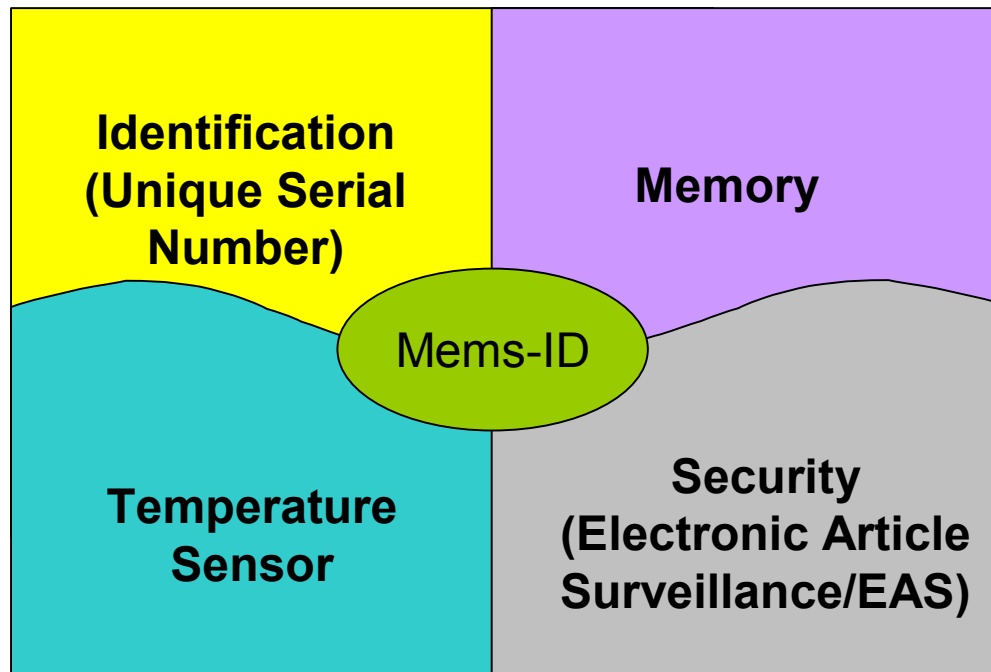
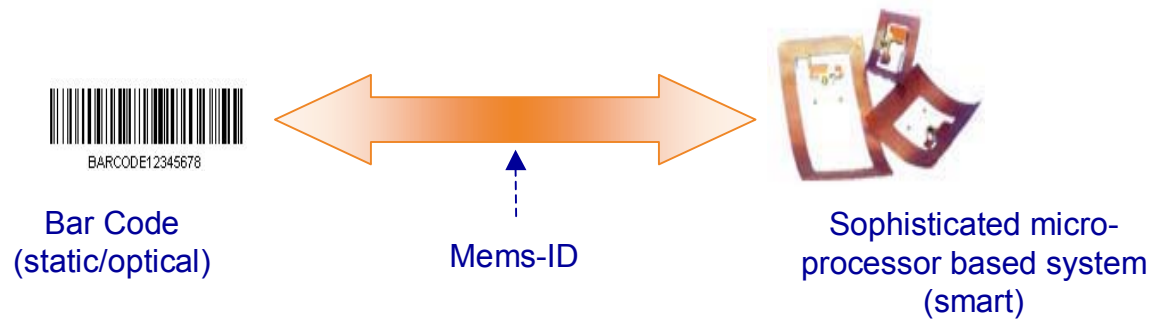


Mems-ID RFID system





Mems-ID functionality



RFID chip - CMOS vs MEMS

	EXISTING RFID TECHNOLOGY	Mems-ID RFID TECHNOLOGY
RFID Chip	Microelectronic integrated circuits (ICs)	Mems-ID chip
Manufacturing approach	CMOS → mature technology	MEMS → disruptive technology
Manufacturing requires: - Processing steps - Equipment	10 – 20 masks Expensive ultra high vacuum equipment	3 – 4 masks Lower cost processing equipment
Cost of RFID chip	Relatively expensive > US \$0.12 - \$2.00 (high volume)	Low-cost < US \$0.01 - \$0.05 (high volume)
Applications	Expensive items or on pallets	Individual items and cartons

Technology development

- Mems-ID technology is being developed with:
 - Technical strategic partners
 - Commercial applications & customers
- Extensive pre-development work:
 - Theoretical studies
 - Computer simulations
- Development of:
 - Prototype Mems-ID tag
 - Prototype Interrogator
- Timeline:
 - Proof of Concept demonstration system Q1 2006
 - Commercial production Q1 2007
- Manufacturing strategy
 - Use contract foundries to make Mems-ID chip
 - Examine case for developing our own fabrication facilities



Differentiator

- Mems-ID is developing a RFID technology system solution that is:
 - patented
 - disruptive technology
 - next generation
 - core platform
 - addresses many cost **AND** operating limitations of existing IC-based passive RFID technologies
 - will enable the application of RFID technology where it has have not been possible until now



Value proposition

- Integrated functionality into a single chip
 - Identification –accommodate a unique serial number plus additional data storage/memory
 - Sensor capability – temperature and thaw indication
 - Security features – similar to electronic article surveillance (EAS)
- Ability to withstand high temperatures and irradiation
 - easily withstand the high autoclaving temperatures and/or irradiation steps needed for modern sterilization procedures without the need for additional costly protection packaging
- Ability to operate at low temperatures
- Small Chip Size
 - directly embedded into product
- **Comparatively Low Cost**
- Continue to refine
 - Operational vs. low cost (cost-effective)
 - How the Mems-ID technology can save users money (cost/benefit)



Focus on healthcare industry

- Instruments:
 - Surgical tools
 - Specialist loan kits
- Biologicals:
 - Blood products
 - Reagents
 - Slides
 - Biological sample storage systems

Healthcare applications

Tagging/Tracking vs. Quality Control/Assurance

Autoclaving track and cycle counting	<ul style="list-style-type: none">■ unique serial number and built-in counter for counting the number of autoclave cycles, above defined temperature threshold, tag has undergone■ overcome the problems of the cumbersome, error-prone, manual accounting systems currently being used
Tagging of biological specimens for low temperature storage	<ul style="list-style-type: none">■ can be stored at sub-zero temperatures
Tracking and tracing of test tubes using “smart” test tube racks and refrigerators for their storage	<ul style="list-style-type: none">■ automated management of test tube location is envisaged.
Attachment to (re-usable) medical and dental instruments	<ul style="list-style-type: none">■ tracking purposes and infection control is envisaged
Tagging of temperature sensitive products – built-in sensor	<ul style="list-style-type: none">■ pharmaceuticals, blood products and vaccines
Complying with regulatory requirements	

Further developments

Watch this space!!

Questions?

Contact details

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