

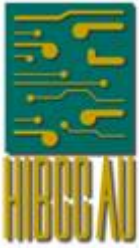


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***The New Kind of RFID
for Healthcare***

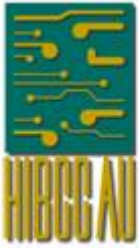
7 September 2006

**Fraser Clayton
Chief Executive Officer
Mems-ID Pty Ltd**



Background

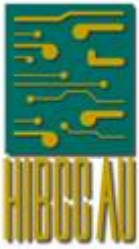
- Many Healthcare systems remain manual
- Vast cost savings and quality benefits are available from information and communication technologies
 - RFID is an excellent example:
 - Tracking and logistics
 - Identification and recording
 - Infection control
- Hostile environments challenge conventional systems
- Surgical instruments is an unsolved problem to date



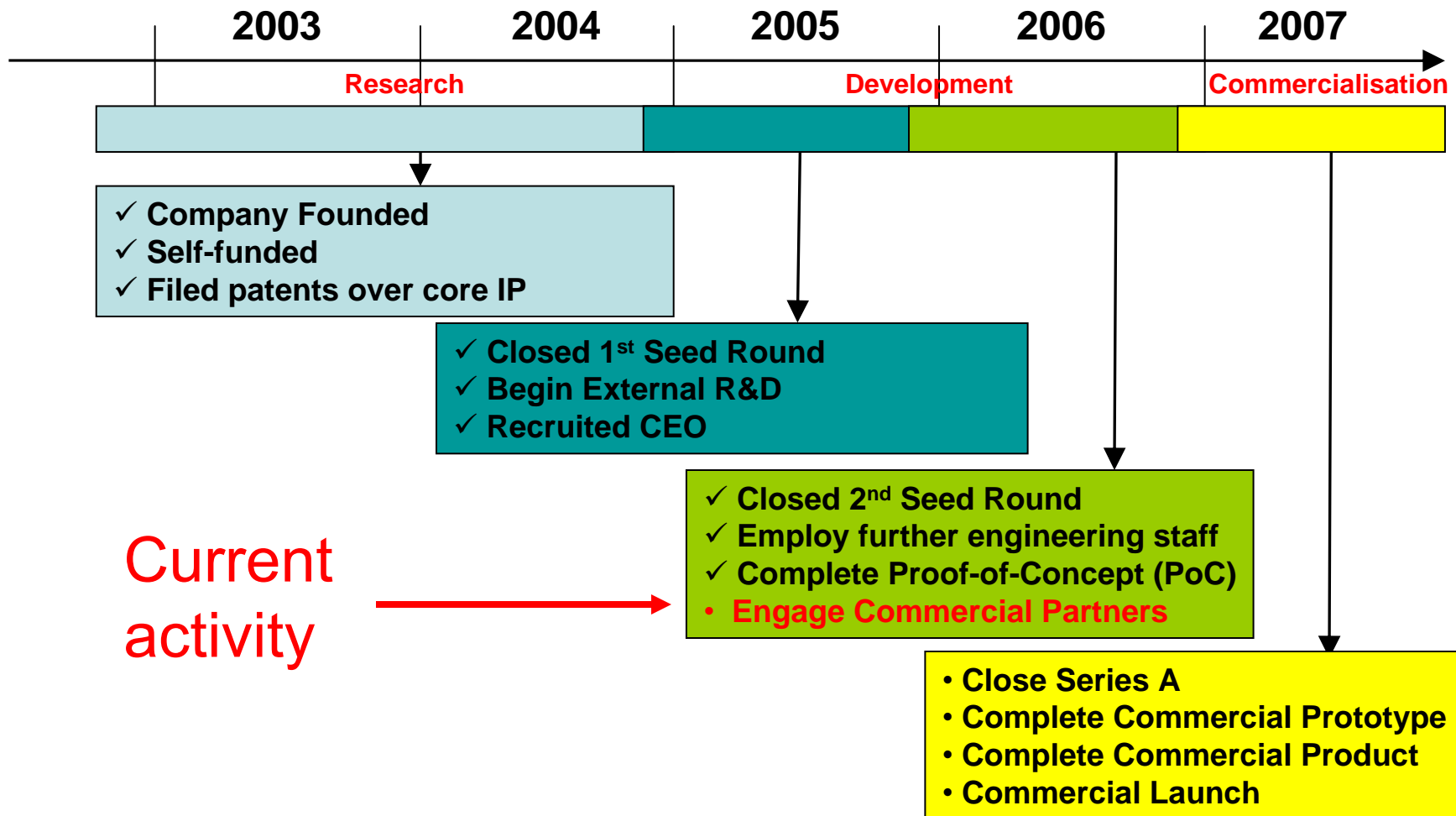
Mems-ID Overview

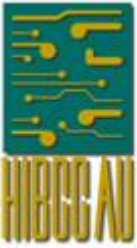


- Developing the next generation of RFID technology
 - Based on a MEMS (Micro Electro Mechanical Systems) platform
- Sole focus - healthcare
- Strong IP position
- Experienced team
 - Technology AND Commercialisation
- Australia (*Melbourne*) and US (*San Diego*) presence



Mems-ID Evolution



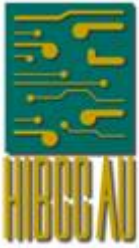


MEMS Platform

MEMS = Micro Electro Mechanical Systems

- Also known as **Microtechnology**
- Common applications
 - Inkjet printer heads, accelerometers for airbag deployment, gyroscopes, sensors, displays and optical switches
- Advantages of MEMS
 - Small size (mechanical components on micrometre size)
 - Low power consumption
 - Can be cheaper to manufacture in high volume
 - Withstand sterilisation and irradiation

June 2005 – CNN named MEMS and RFID in its Top 25 Innovations of the last quarter century



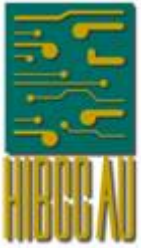
MEMS-ID System Overview



- Key products
 - RFID chip (0.5 mm x 0.5 mm)
 - Proprietary interrogator/reader system
 - 13.56MHz
- Initial healthcare applications
 - Medical Devices
 - Orthopaedic surgical instruments/loaner-kits
 - Pharmaceuticals (temperature sensitive)
 - Blood products and vaccines
 - In Vitro Diagnostics (IVD)
 - Slides/tissue cassettes
 - Reagents



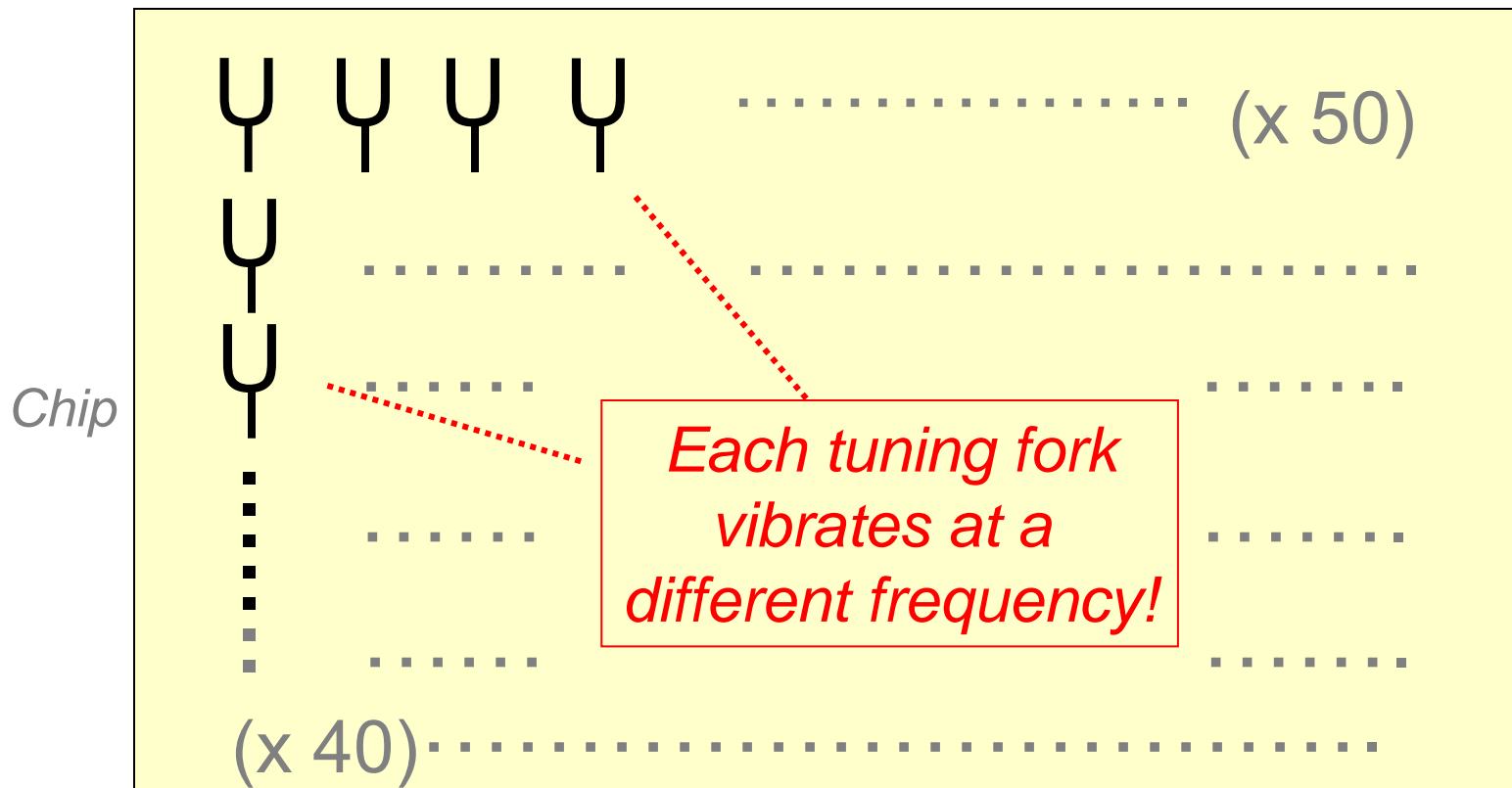
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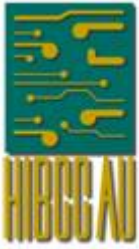


Mems-ID RFID Concept



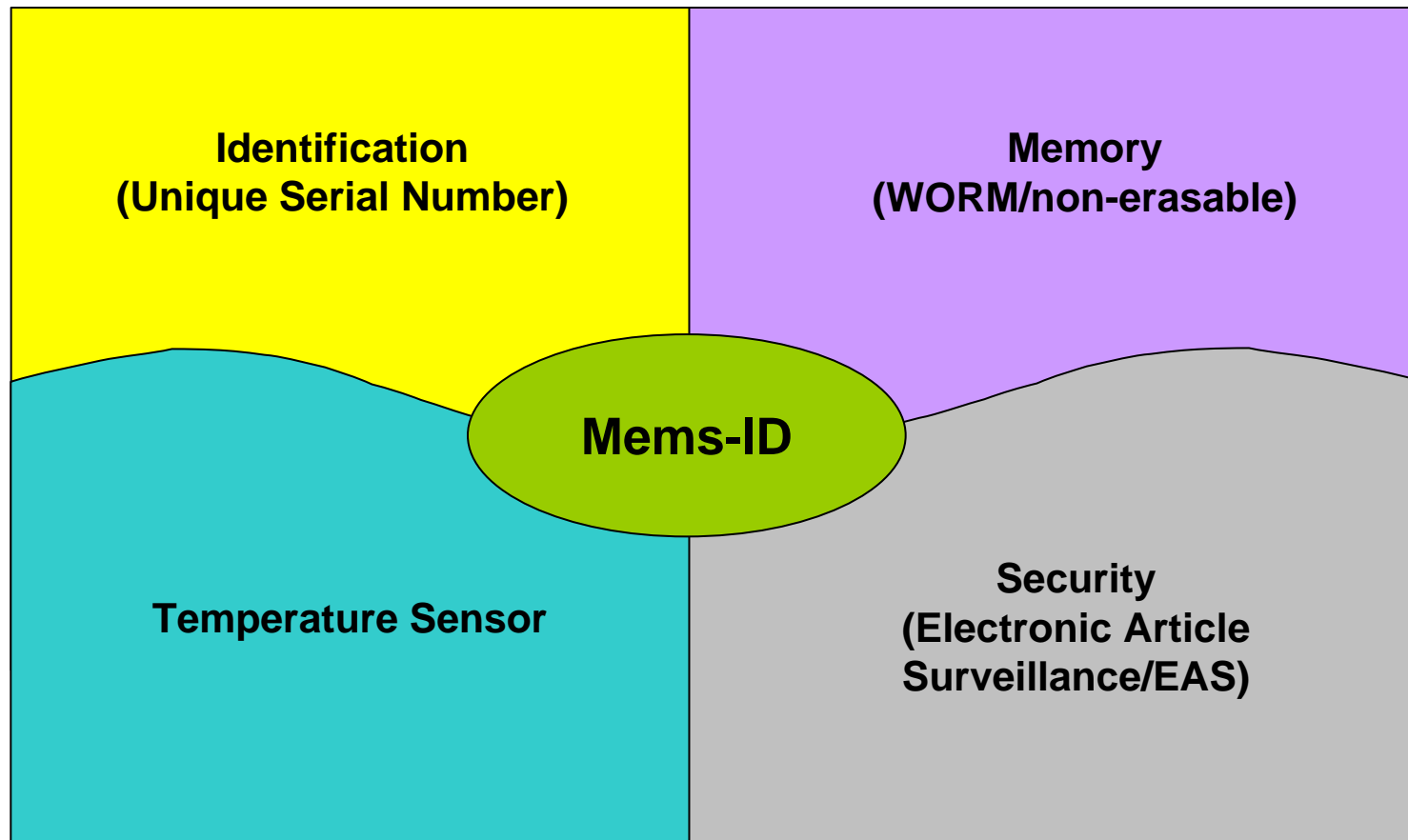
Concept: 2,000 “micro” tuning forks (beams) on a chip = 2,000 bits

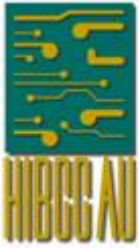




Mems-ID Chip

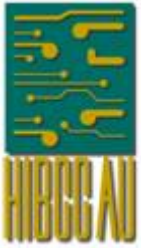
Integrated Capabilities





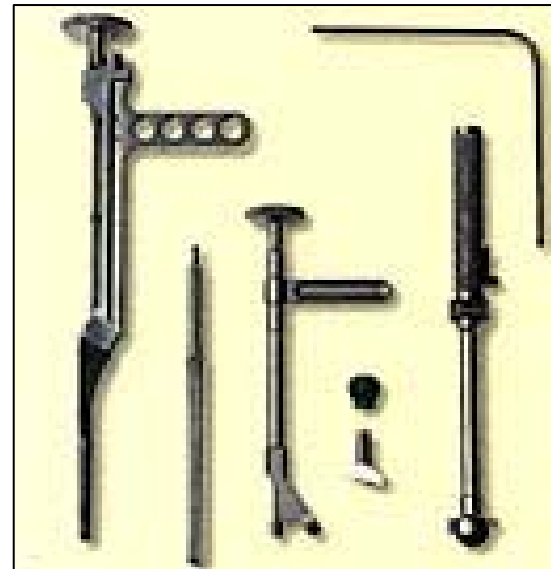
Applications for MemS-ID

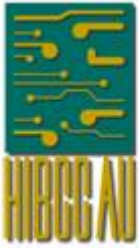
	Medical Devices	Pharmaceuticals	In Vitro Diagnostics (IVD)
Specific Use Case	Orthopaedic loaner kit instruments and tools	Blood products and vaccines	Re-agents, slides, test tubes and tissue cassettes
Current solution	Data matrix (2-D barcode)	Barcodes Temperature sensors	Barcodes
Value proposition	<ul style="list-style-type: none">✓ Fully automatic tracking✓ Survive sterilisation✓ Ability to write data	<ul style="list-style-type: none">✓ Ability to write data✓ Temperature sensing✓ Security tag	<ul style="list-style-type: none">✓ Ability to write data✓ Multiple reads in any orientation



Ortho Loan Kits

- Loaner kits used in orthopaedic surgery
- Manually counted 10-17 times from Mfr → surgery → Mfr
- Many instruments are similar
- Kits can cost \$50k
- Significant error rate
- Cost of error very high

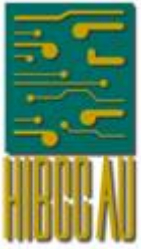




Business Case

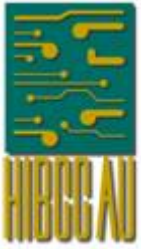
- Unique value proposition
 - Survive sterilisation and irradiation
- High value-add
 - Save significant **labour costs** (manual counts)
 - Minimise **errors** (completeness of kits)
- Traceability
 - Infection control
- Management
 - Management of instrument lifespan
 - Verification of autoclaving (peak temperature achieved)





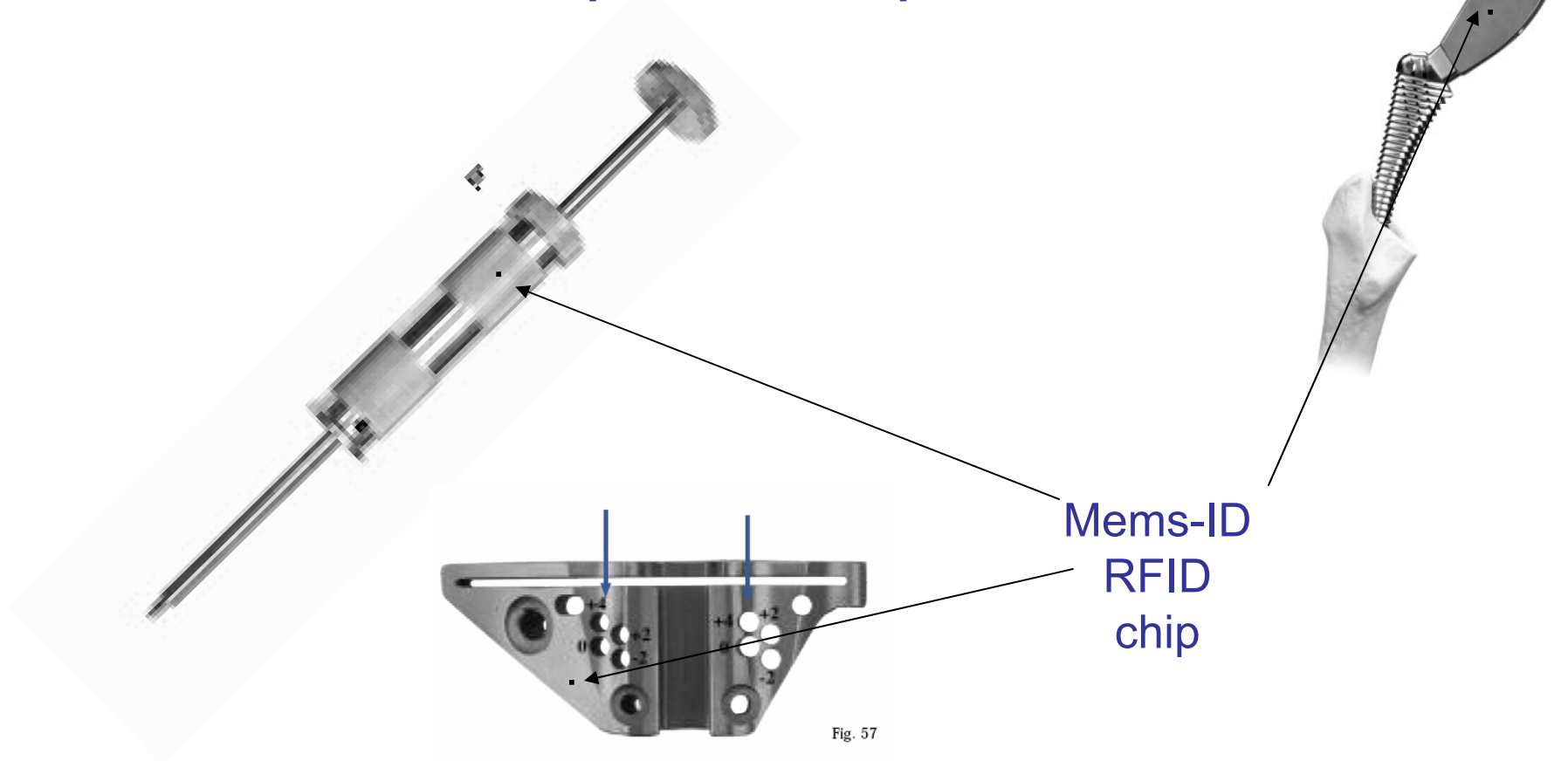
Current Practice

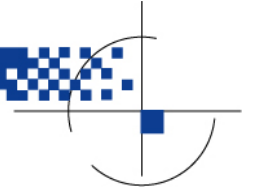
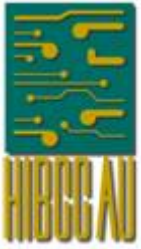




Application to Device

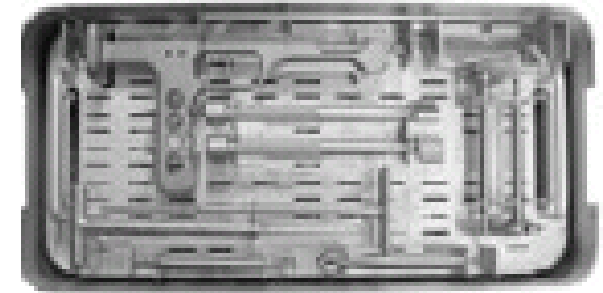
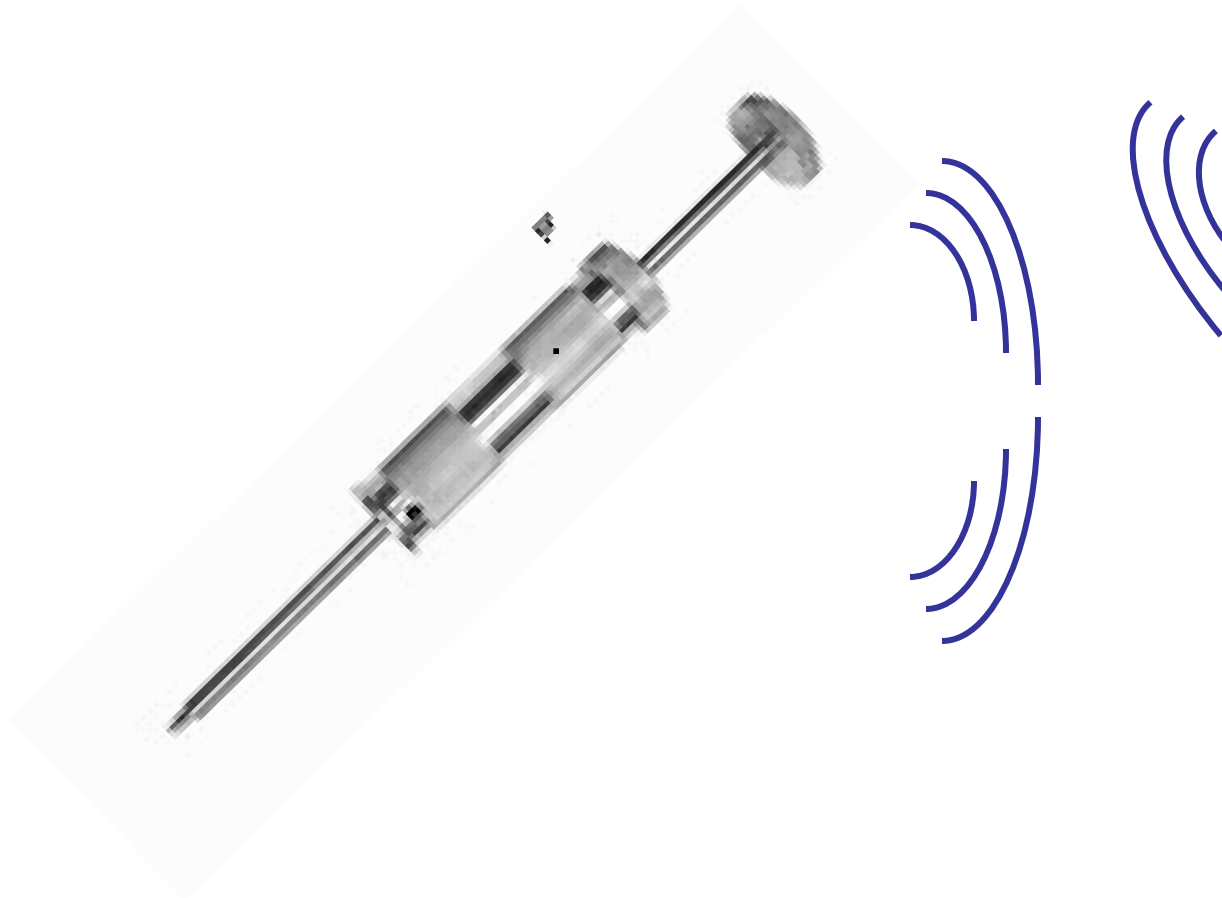
Mems-ID Level 1 – Concept of RFID Chip on instruments





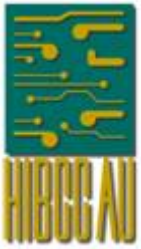
Tray Interrogator

Mems-ID Level 2 - Interrogator built into tray



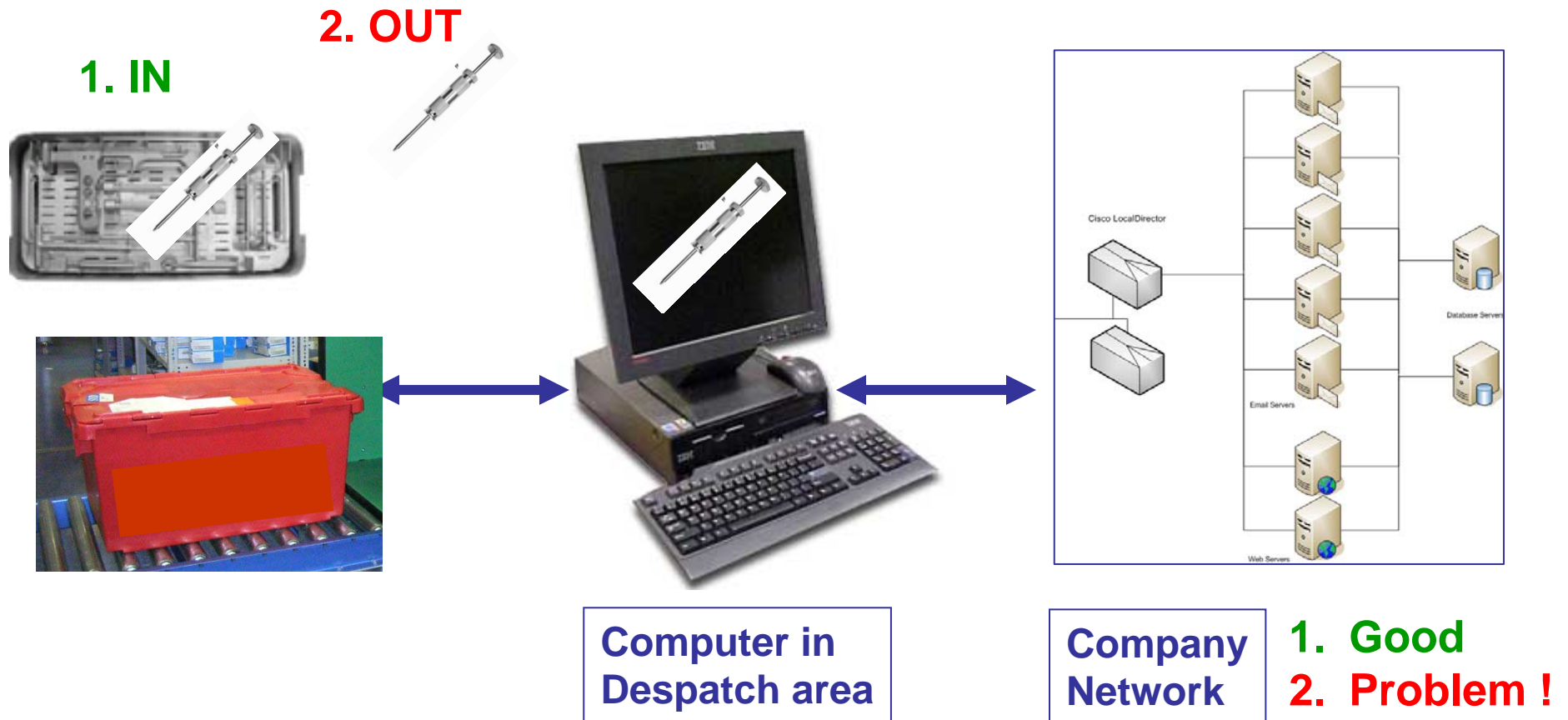
Interrogator

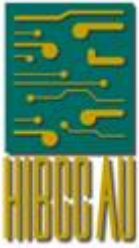




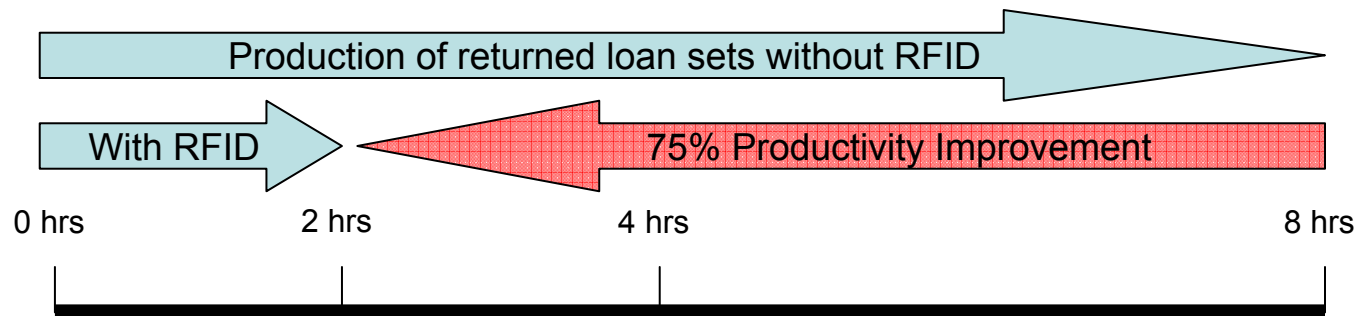
Integration

Mems-ID Level 3 - Integrated system with hospital IT infrastructure



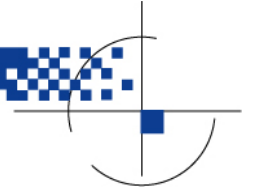
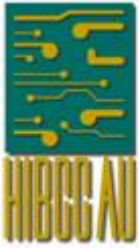


HIBCC Paper



Source: HIBCC Auto- ID Technical Committee RFID Case Study - Orthopaedics RFID Application for "Loaner Set" Logistics - January 2006

- Significant Cost Savings
- Significant Productivity Improvement
- Significant Reduction in inventory held
- Reduction in working capital = increased profitability
- Improved traceability

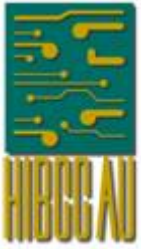


Return on Investment

- One US Distribution Center
- 1,200 employees
- 300,000 instruments/day
- 75% labour savings with RFID
- Assume 900 employees at \$25k per employee loaded

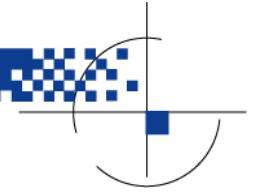
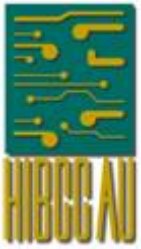


= \$22.5M savings per year for that one facility!

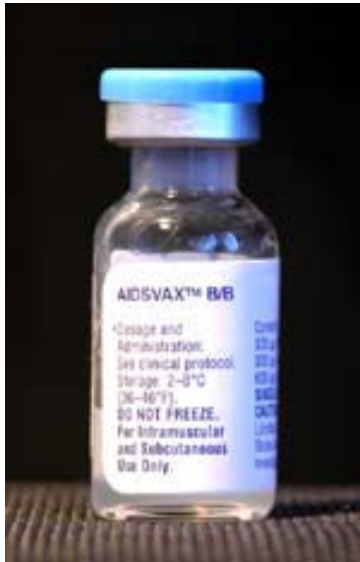


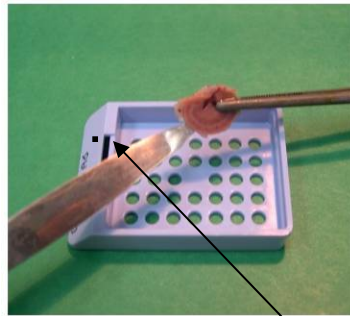
Key Challenges

- Fitting to instruments
 - Changing design of new instruments
 - Retrofitting existing kits – efficiently!
- Regulation and Approval
 - Risk analysis
 - Biosafety
 - Fail safe
 - Label issue

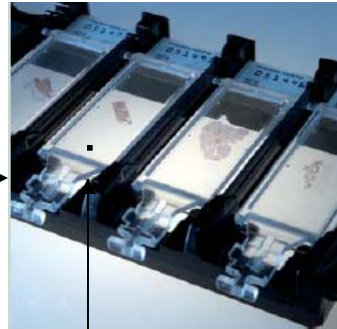


Pharmaceuticals





Biopsy tissue taken and submitted in a cassette



Biopsy tissue sliced and placed on individual slide for analysis



Place multiple slides in "automated" analyser – use barcodes or OCR



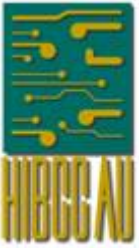
Slides "stainer" using reagents



Stored – 21 years in Australia/7 years in US

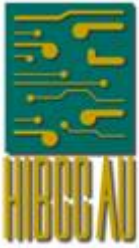
Mems-ID chip





Commercialisation

- 6 mths from alpha (α) \Rightarrow beta (β) version of chip + interrogator
- Working with “early adopters” to develop focused systems
- Field trials to be conducted
- Detailed parametric and functional testing
- Final design iteration to commercial prototype
- Volume production ramp-up



Summary

- MEMS-based RFID offers access to new healthcare applications
- Benefits to:
 - Cost
 - Quality, and
 - Control
- Integrated functionality
- Challenges in deployment
- Technology commercialised and available late 2007