

Infineon

IFX Day 2003

Munich – September 22, 2003

Technology Lifestyle Solutions

Dr. Werner Weber
Corporate Research



Never stop thinking.

Disclaimer

Please note that while you are reviewing this information, this presentation was created as of the date listed, and reflected management views as of that date.

This presentation contains certain forward-looking statements that are subject to known and unknown risks and uncertainties that could cause actual results to differ materially from those expressed or implied by such statements. Such risks and uncertainties include, but are not limited to the Risk Factors noted in the Company's Earnings Releases and the Company's filings with the Securities and Exchange Commission.

1947: Transistor Development

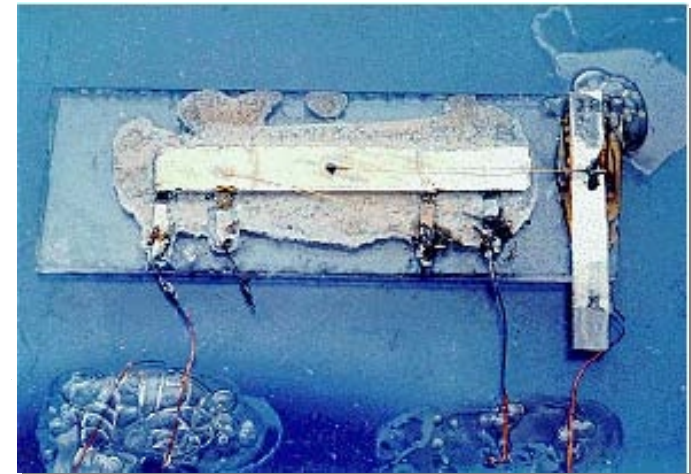
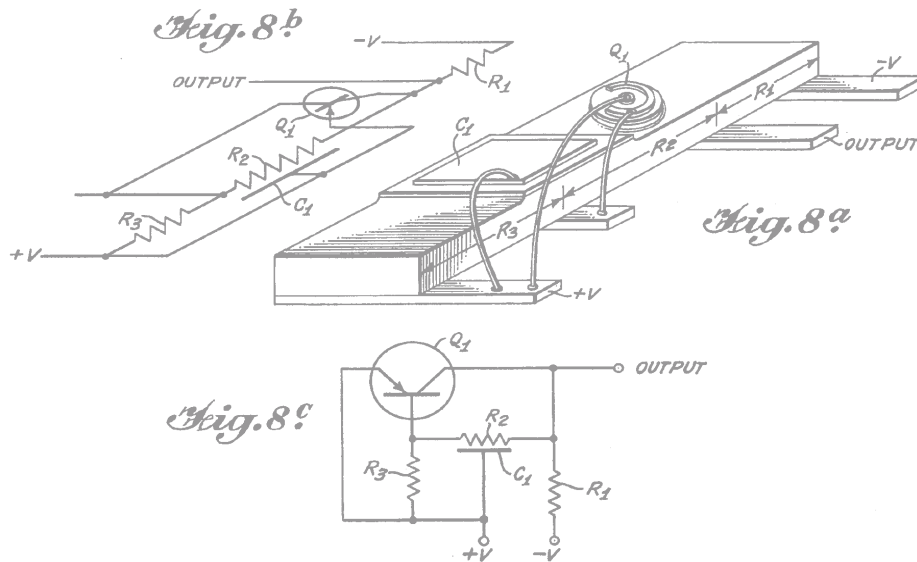
December 23 - William Shockley, Walter Brattain and John Bardeen successfully tested this point-contact transfer resistor, setting off the semiconductor revolution



In 1956, William Shockley, Walter Houser Brattain and John Bardeen received the Nobel Prize in Physics for "their researches on semiconductors and their discovery of the transistor effect".

1958: IC Development - Jack Kilby

Jack Kilby creates the first integrated circuit at Texas Instruments to prove that resistors, transistors and capacitors could exist on the same piece of semiconductor material (Germanium)

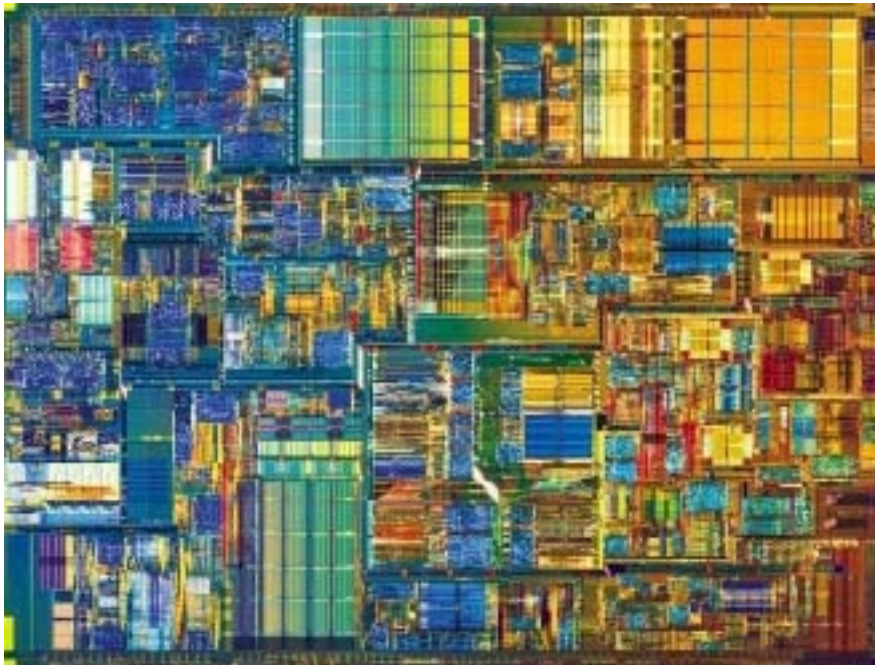


In 2000, Jack St. Clair Kilby received the Nobel Prize in Physics for "his part in the invention of the integrated circuit"

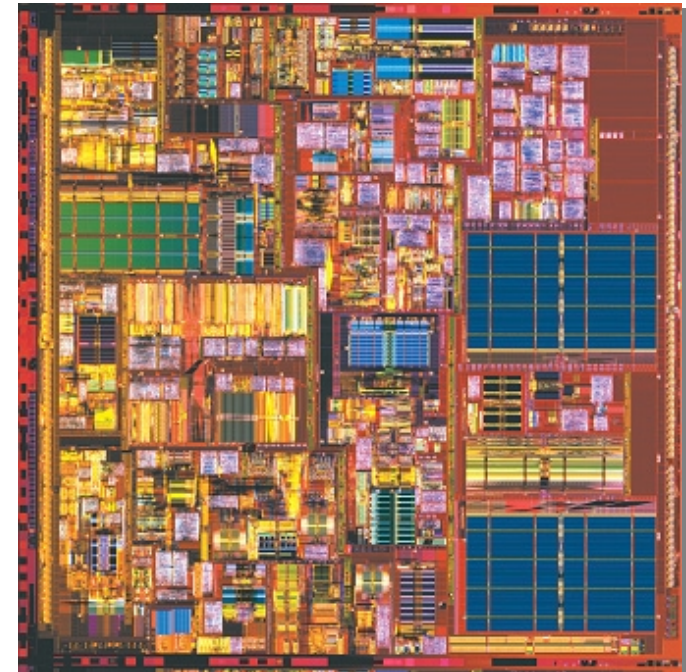
2002, Intel Pentium 4

Introduction of the Intel Pentium 4 Microprocessor

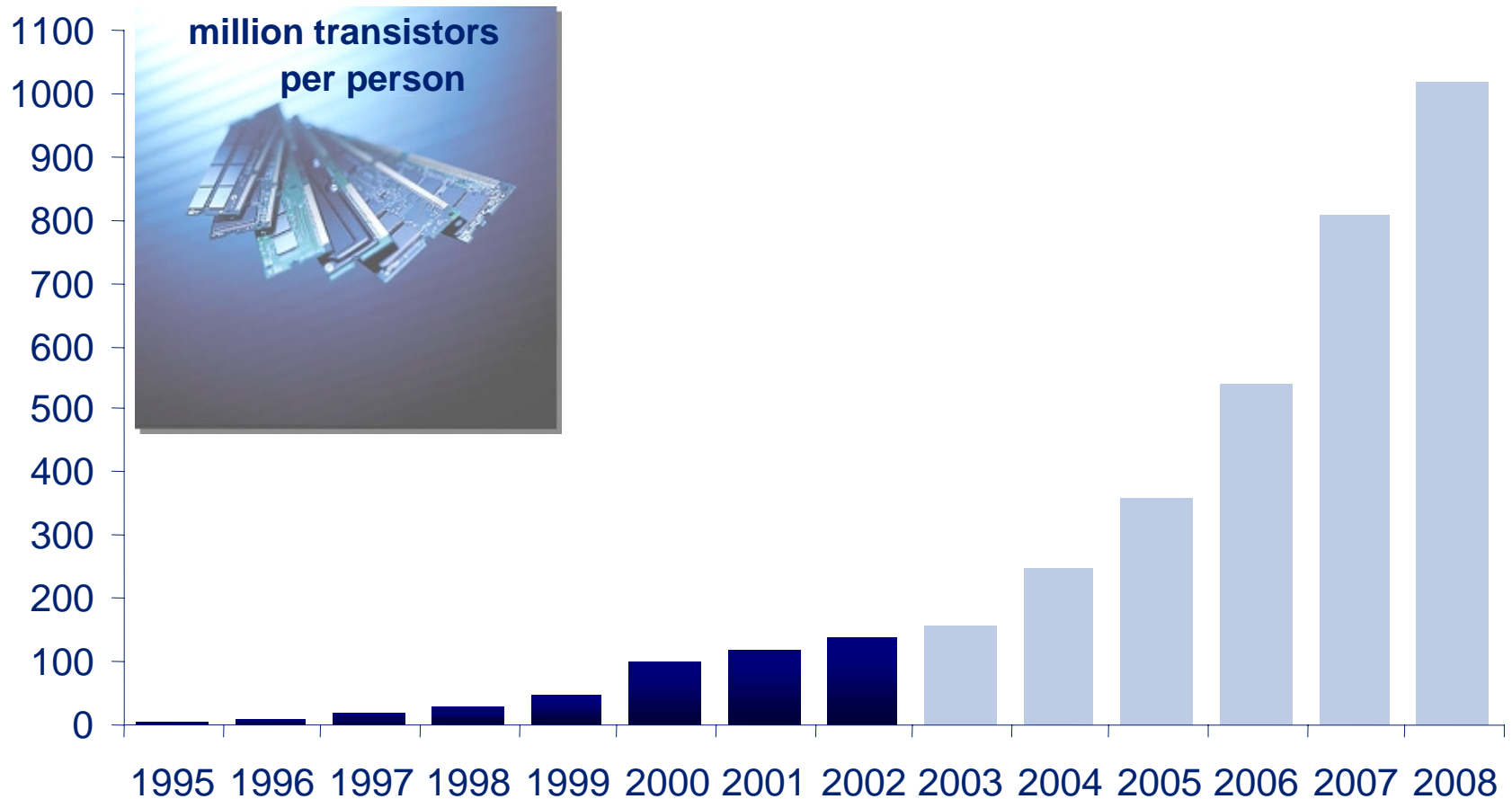
- 42 mio. transistors
- 0.18 μ m technology
- 1.6 GHz



- 42 mio. transistors
- 0.13 μ m technology
- 2.2 GHz



Today: More than 100 million Transistors per Person



From Products to Complete Solutions for Individual Lifestyles

- **Work & Communication**
Fast access + high data rates for home & office + mobile communication
- **Leisure Time**
Music, video, games, multimedia
- anytime, anywhere
- **Intelligent Clothing**
New opportunities, individual solutions
- **Enhanced Security**
Contactless systems, fast encryption
biometric solutions
- **Health**
Control of body functions,
data security, health check
- **Mobility**
Telematics, infotainment



Wearable Electronics

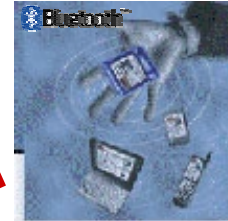


Electronic Components in Smart Textiles



Chip for Speech recognition

- music player (MP3, ...)
- email, SMS to voice



Bluetooth (short range)

- audio link
- interactive games



Smart Card ICs / ID tags

- logistics chain management
- secure data transmission



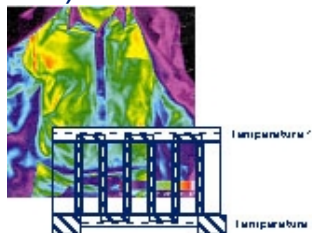
GPS/GSM

- safety applications
- interactive games

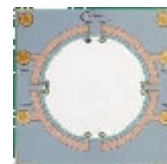


MultiMediaCard (MMC)

- storage of music
- content



thermo generators



MEMS

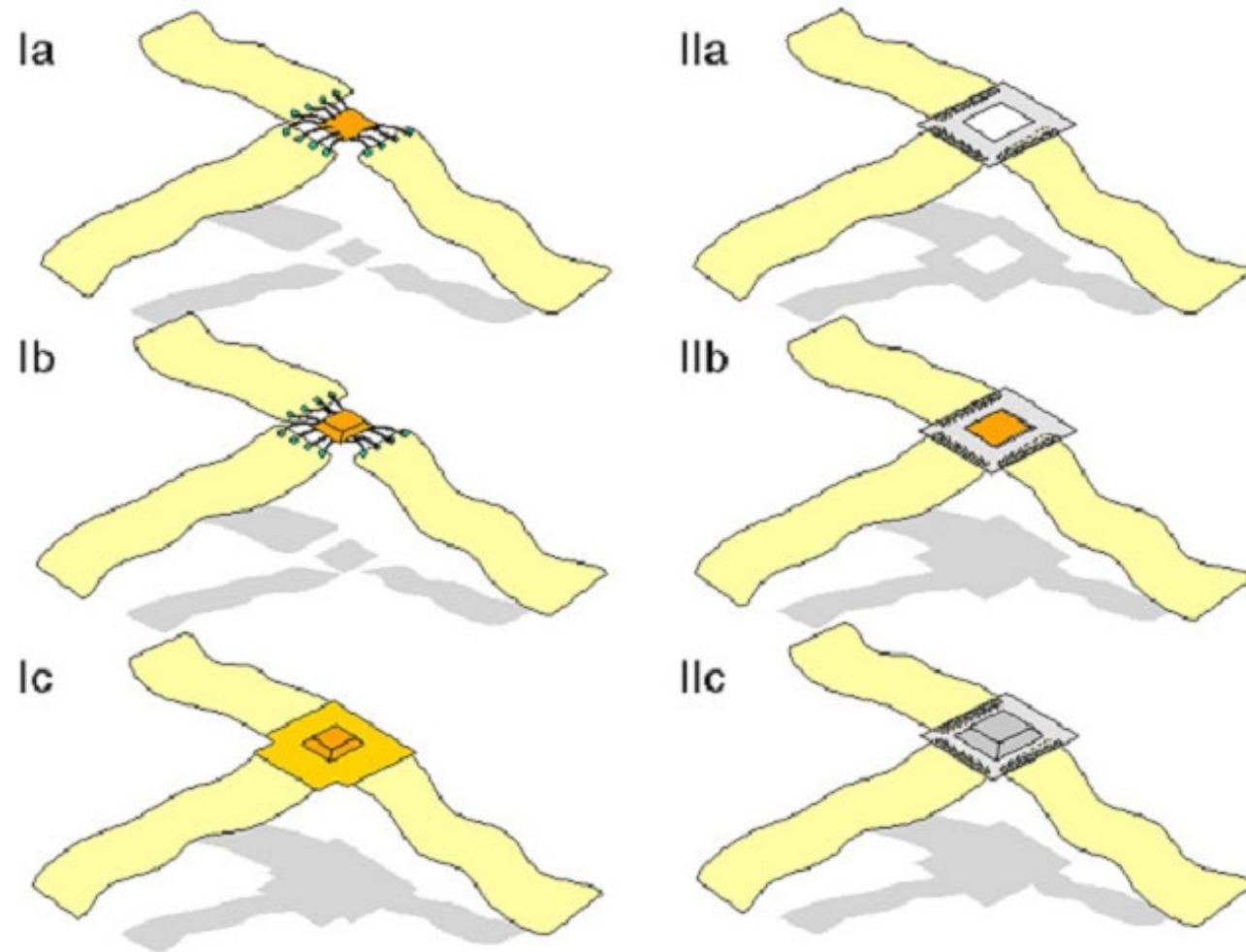
- pressure
- acceleration
- temperature



FingerTip

- authentication
- identification

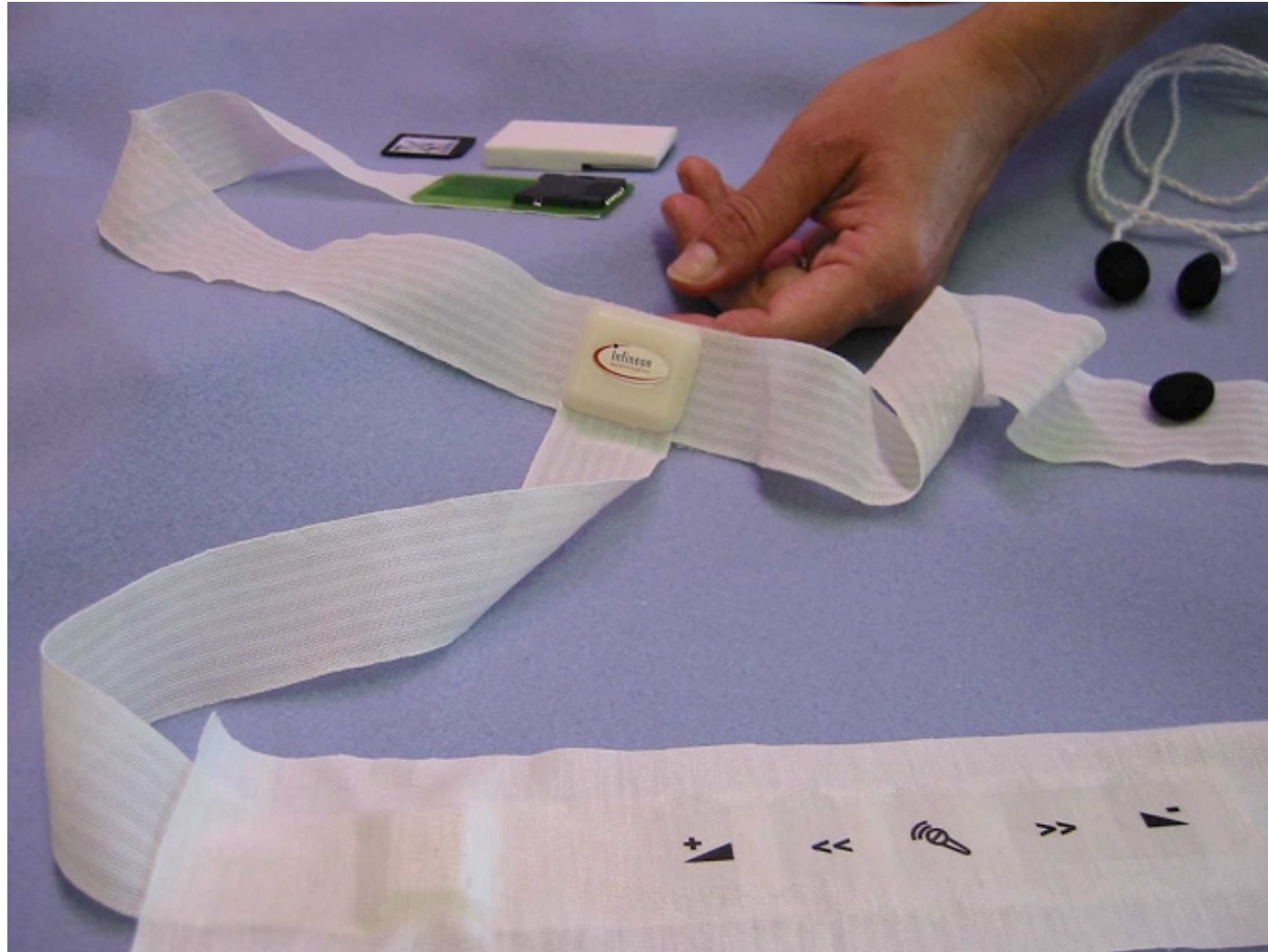
The Missing Link: Interconnect Technologies



Integrated Microelectronics for Smart Textiles



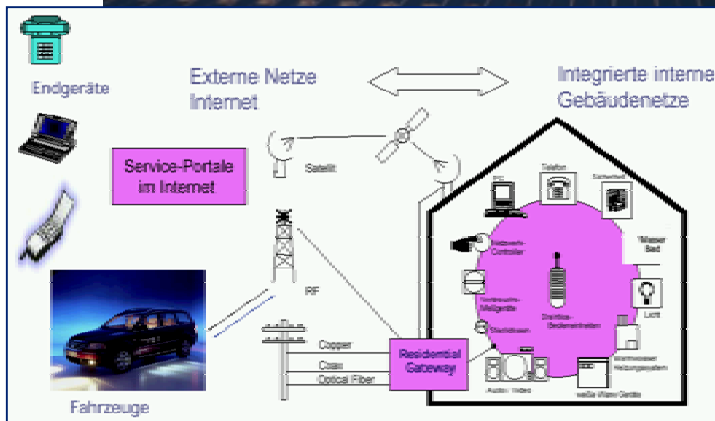
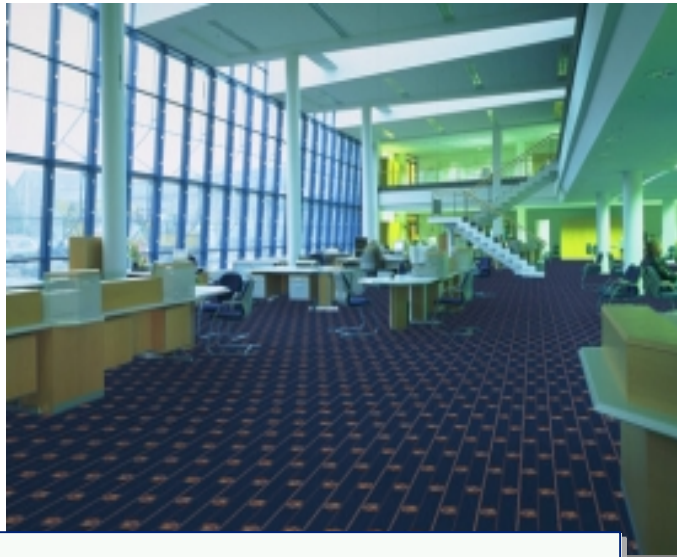
Integration of Electronic Components in Textiles



Wearable Electronics



Integrated Microelectronics for Smart Textiles - Applications of Intelligent Technical Textiles



intelligent house, Source: InHaus, FhG

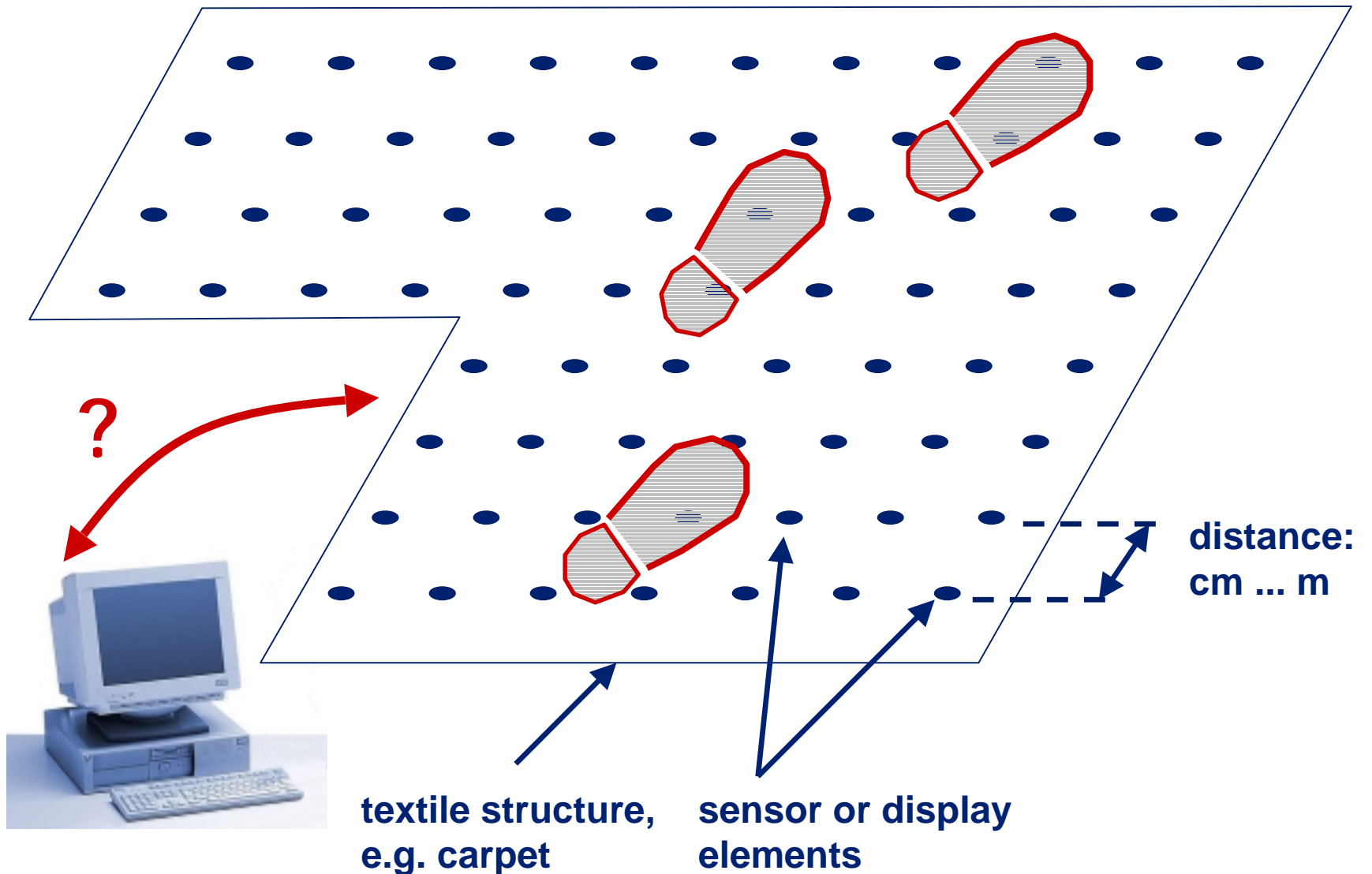
Vision:

Distributed sensor elements, light emitting diodes, or microprocessors integrated in large area electrically conductive textiles

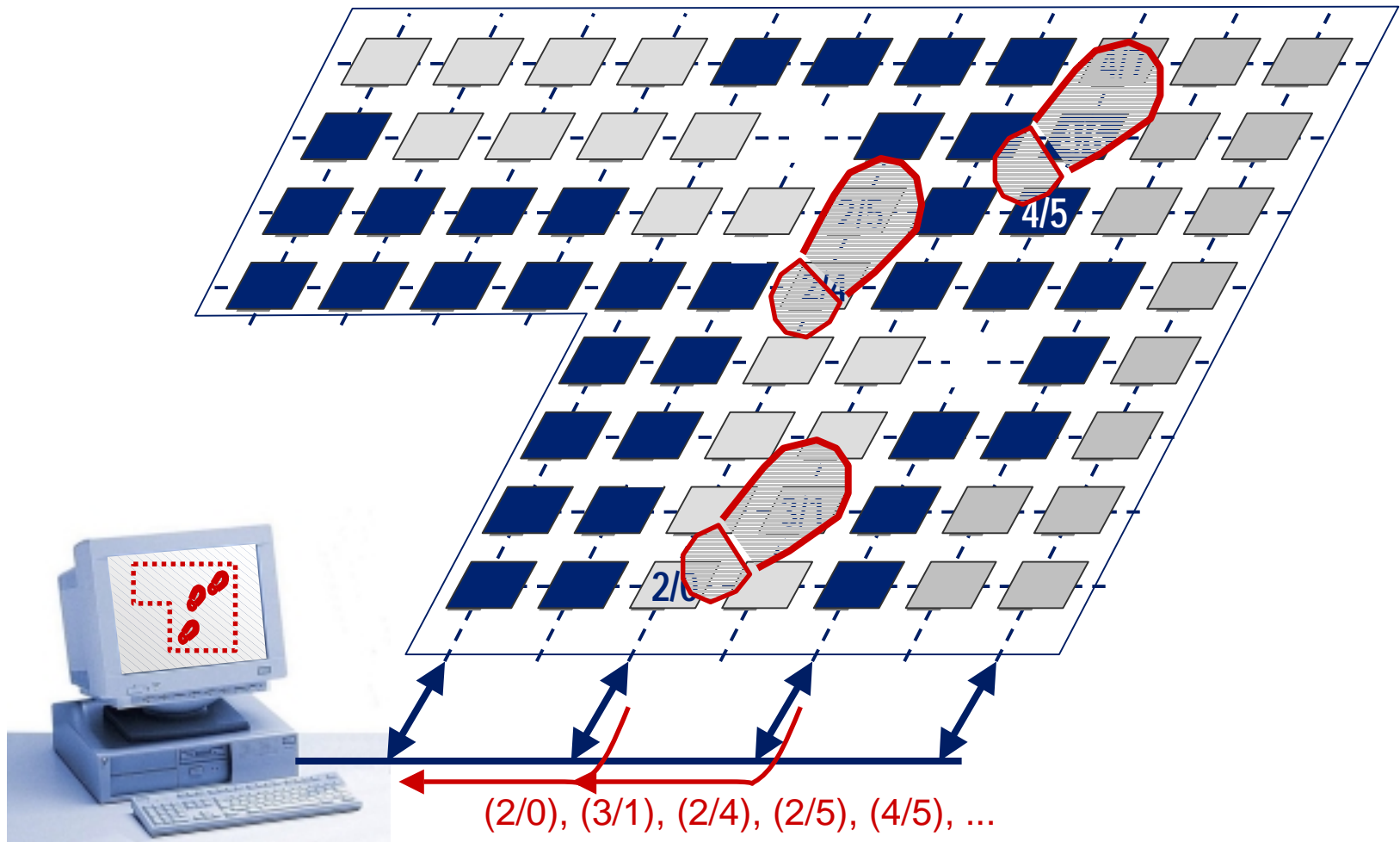
Examples:

- Pressure sensors in floor coverings for surveillance systems or motion detection (person tracking)
- Indicator lamps in floor or wall coverings for guidance systems in public buildings
- ...

Integrated Microelectronics for Smart Textiles - Example: Intelligent Floor Covering (Smart Carpet)



Concept of operation: Activated Sensing Element Transmits Data, e.g. to a Central Home Automation Unit



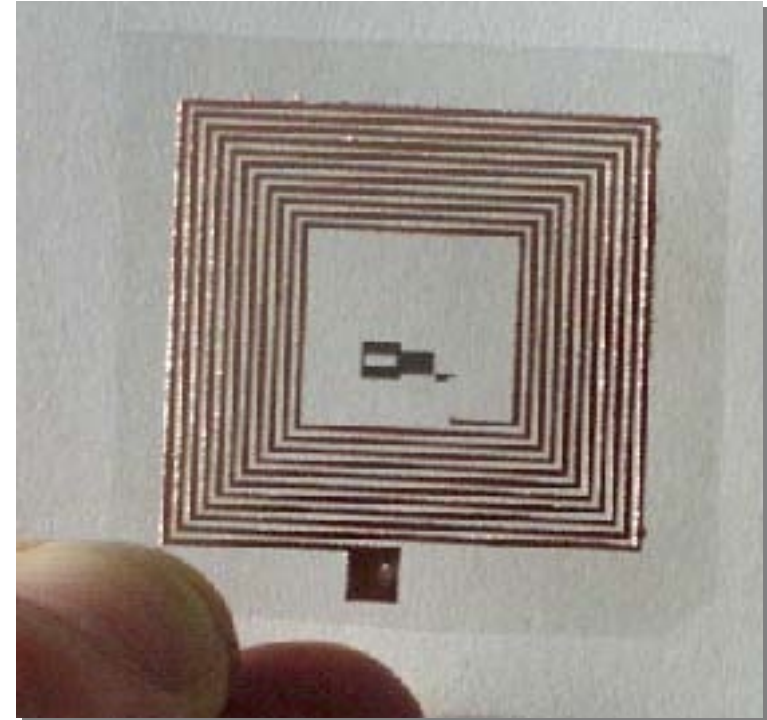
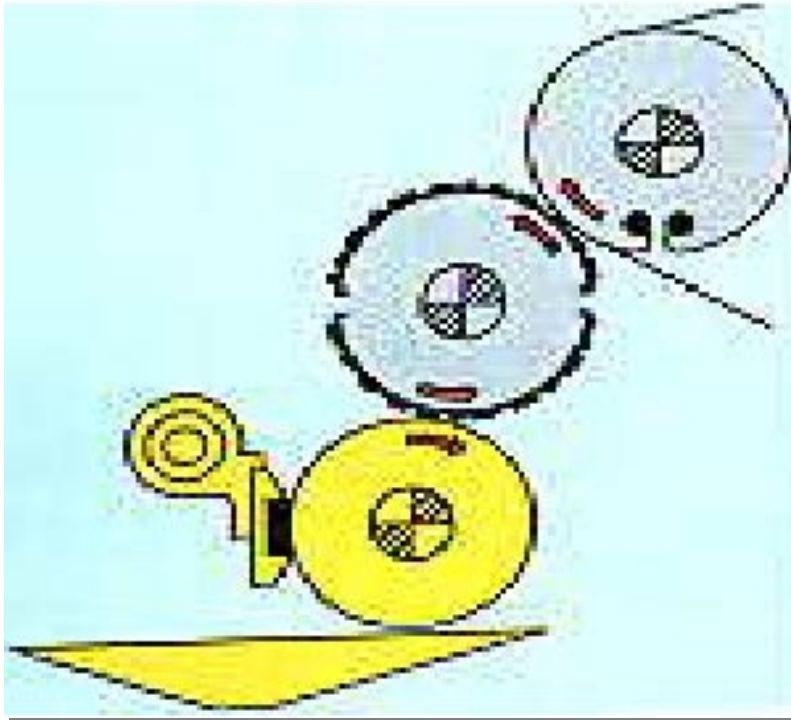
May 2003: Smart Carpet Sample July 2003: Development Project with Vorwerk



Technology Lifestyle Solutions in Libraries

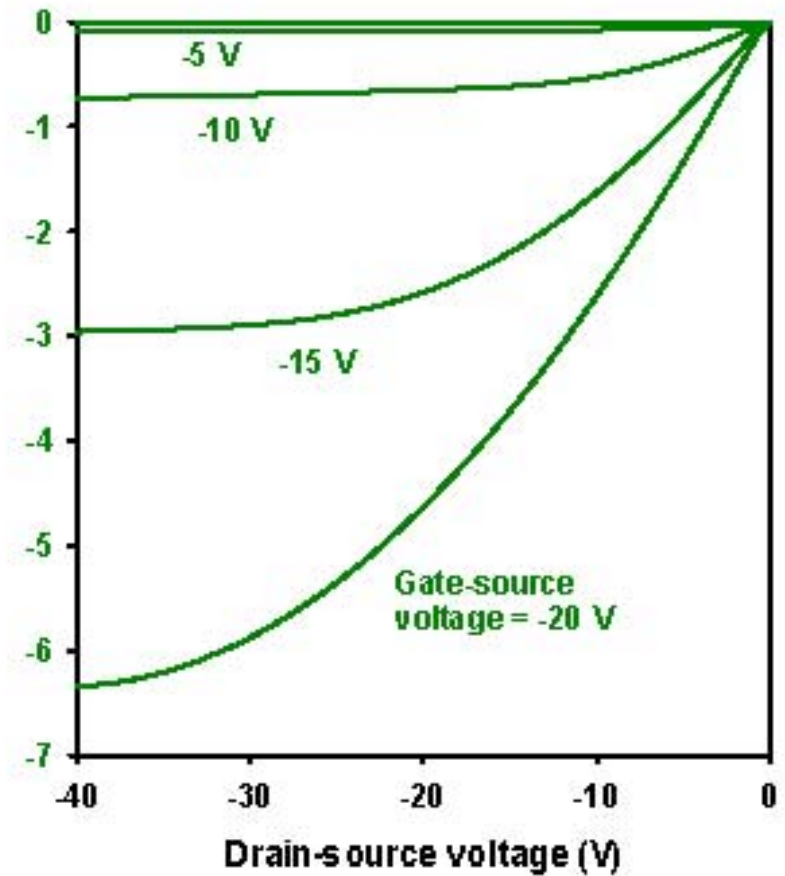


Partially Printed Electronics

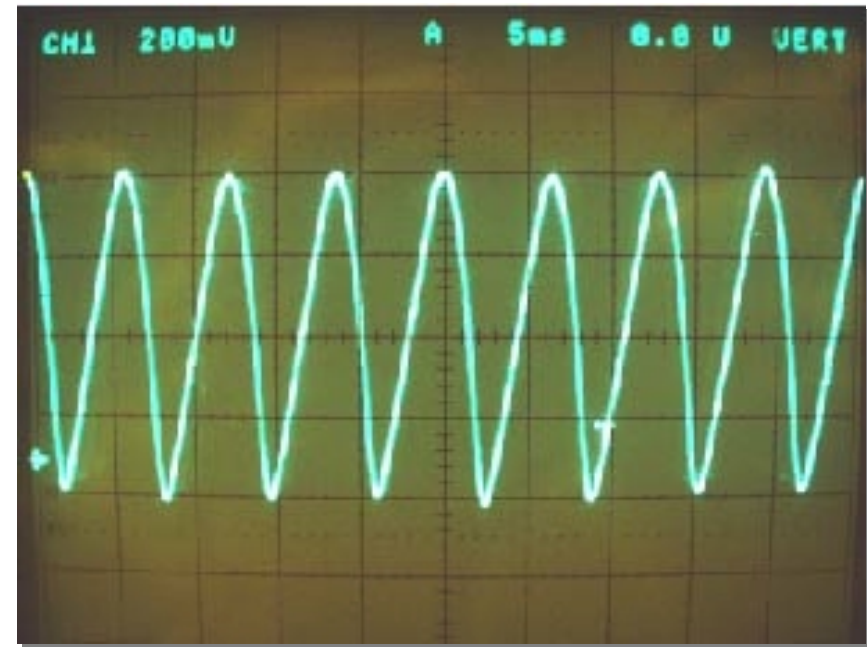


- Antenna and 1st "polymer" metallization layer printed
- Functional devices processed subsequently

Electronics on Ordinary Unfilled Paper

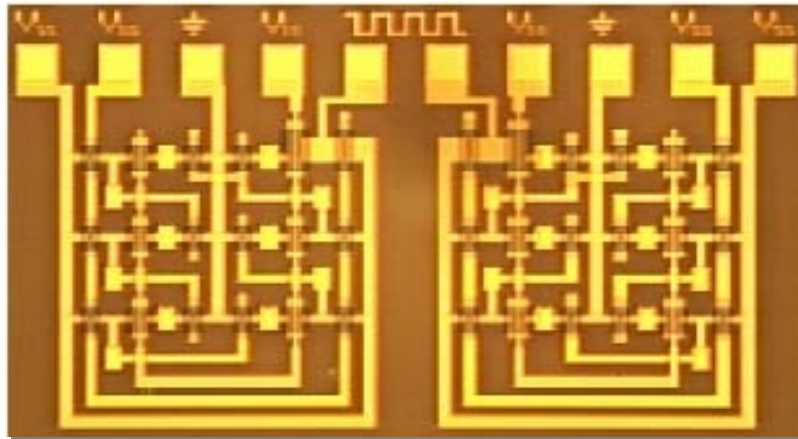
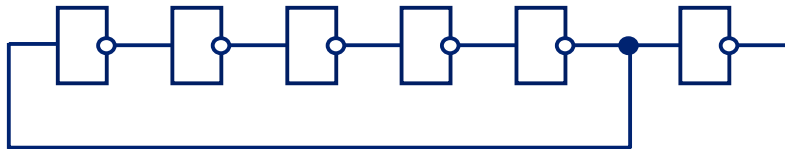


Electronics on Aluminized Polyester Foils: Food Packaging

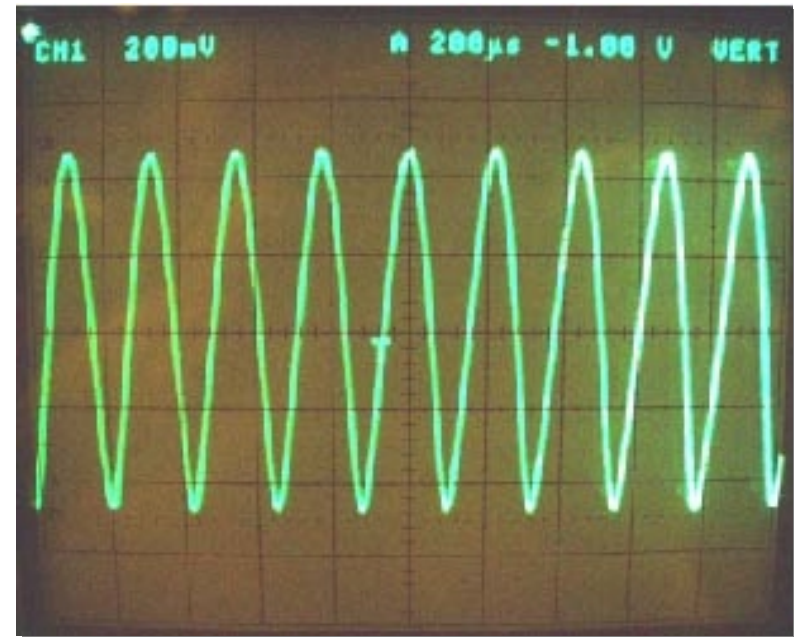


5-stage ring oscillator: 150 Hz
Propagation delay: 650 μ sec per stage

Pentacene TFTs and Circuits on Flexible Substrates

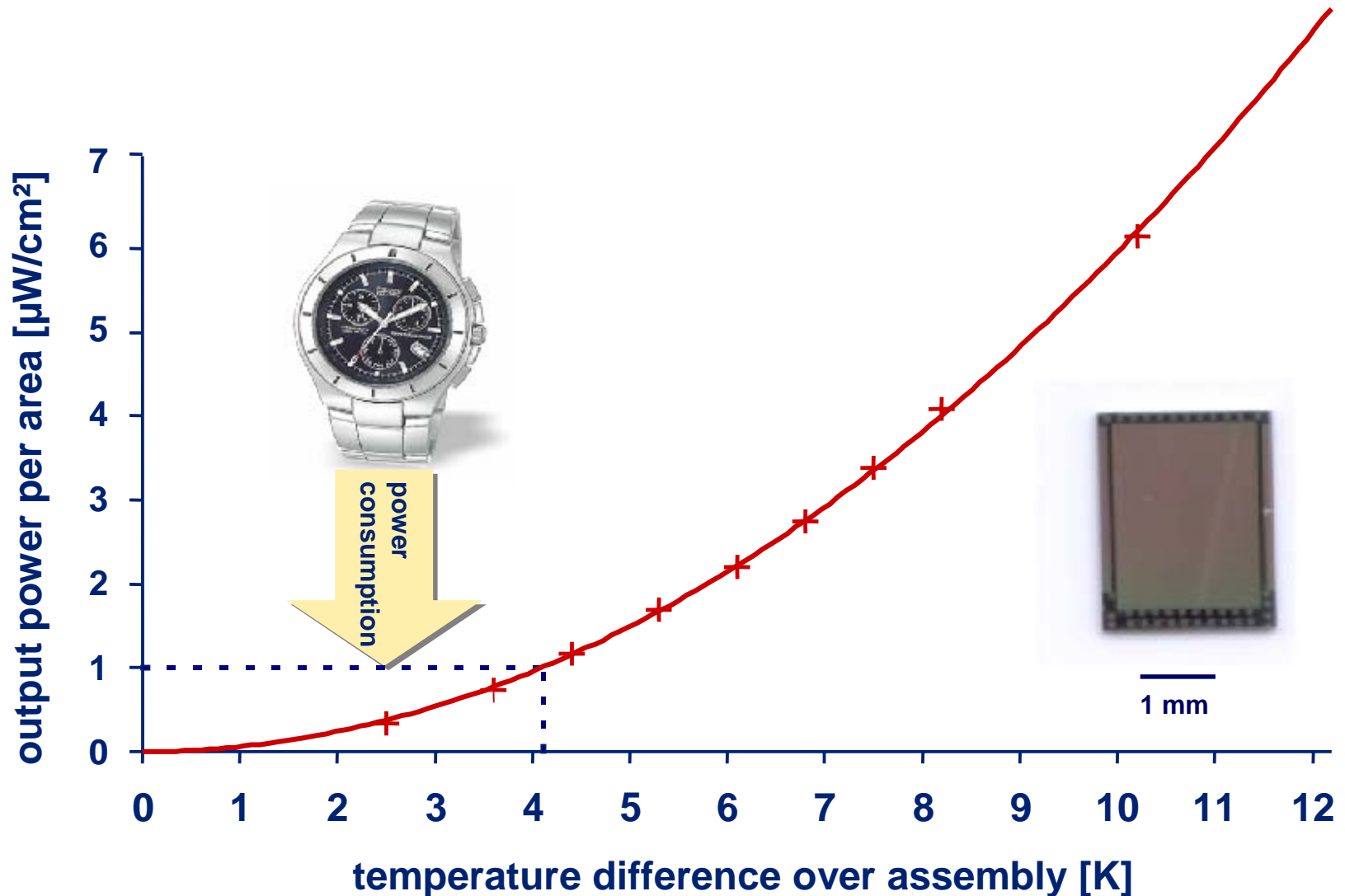


5-stage ring oscillator with integrated level-shifting and output buffer

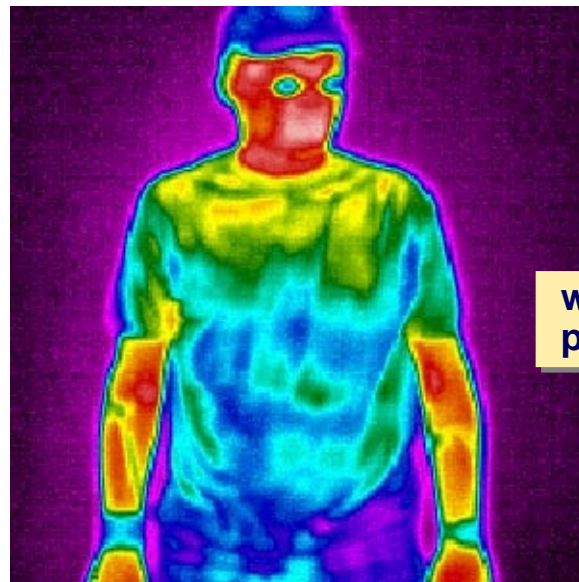
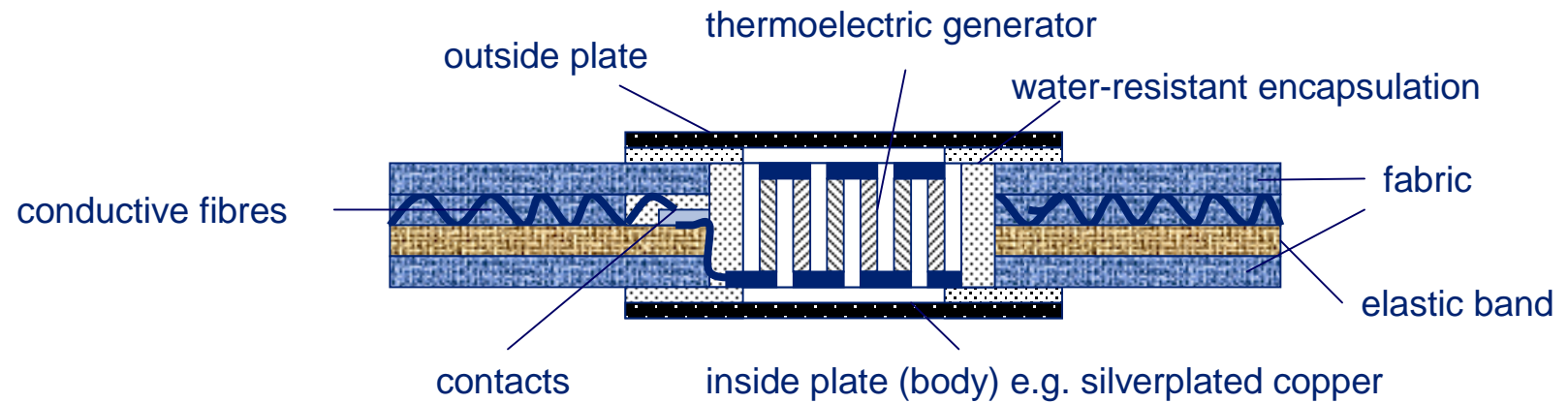


**Channel length: 5 μm
Frequency: 4.5 kHz
Propagation delay: 22 μsec per stage**

Energy Harvesting Thermoelectric Generator



Energy Harvesting Thermoelectric Generator

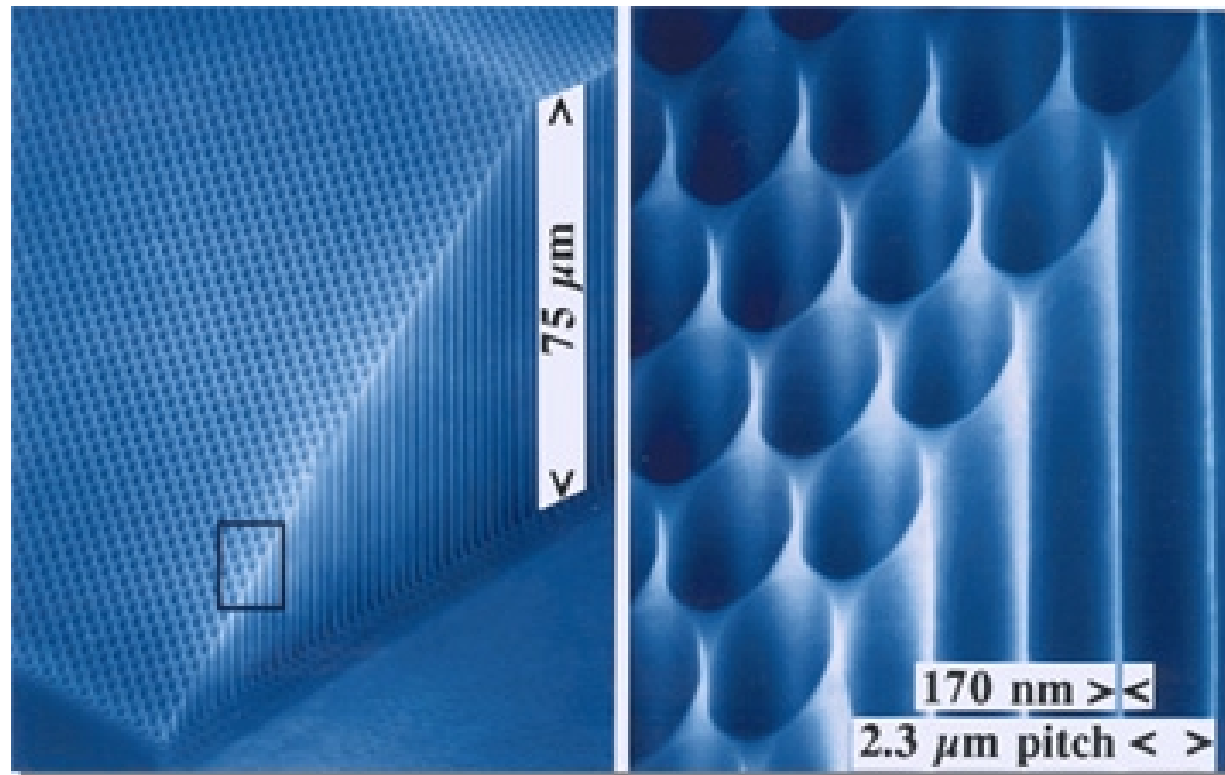


**waste heat
power supply**



Optical Biochips Based on Infineons' Porous Silicon

- Microstructured pores have a diameter of 10 μm , that is a tenth of a human hair
- 1 million pores on one square centimeter



Optical Biochips System Solution for Drug Development and Diagnostics



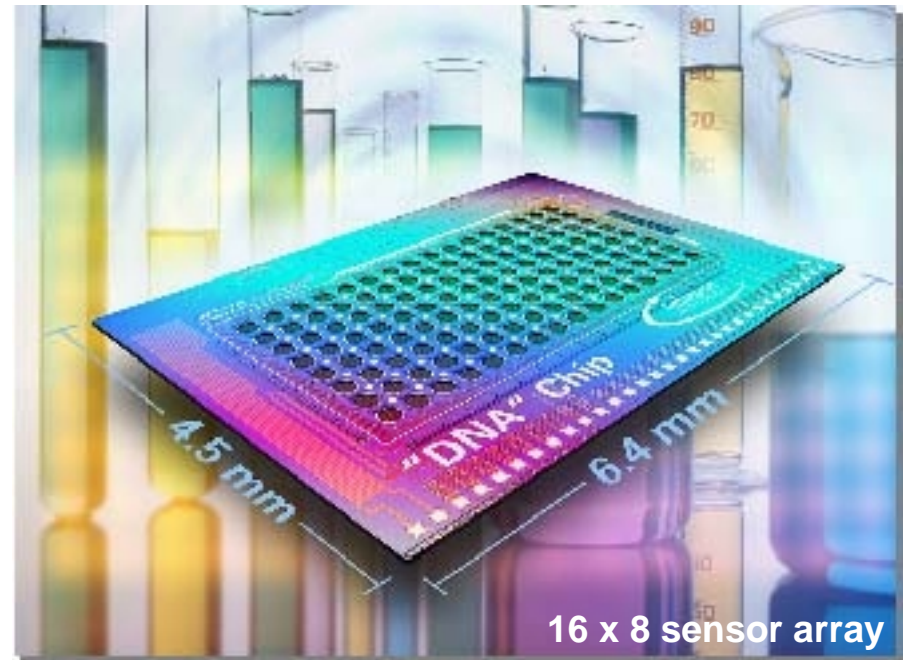
Fully Electronic DNA-chip

First Biochip with Integrated Electronics

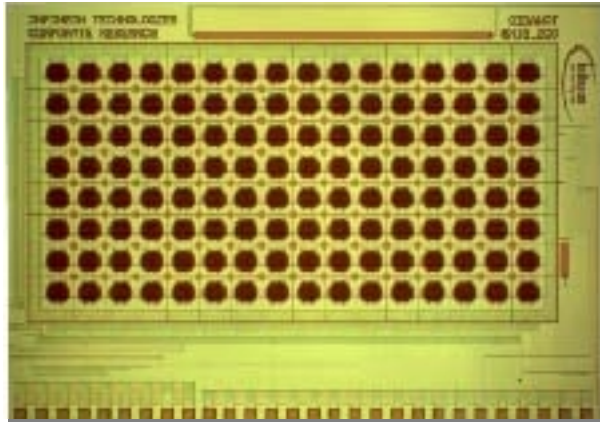
**Why fully electronic
DNA-detection?**



- Robust & easy operation of electrical systems
- Optical components are completely avoided and replaced by inexpensive electrical components
- Access to new fields of applications, new markets (e.g. diagnosis in hospitals and doctors' offices)

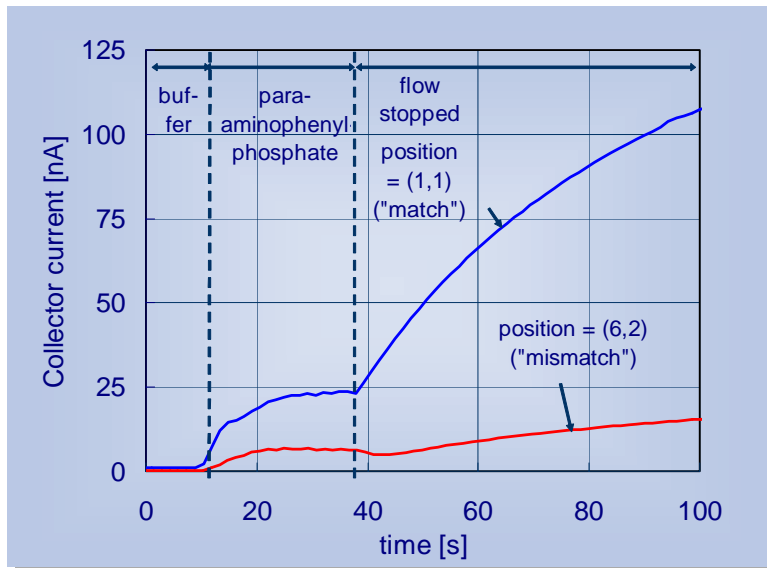
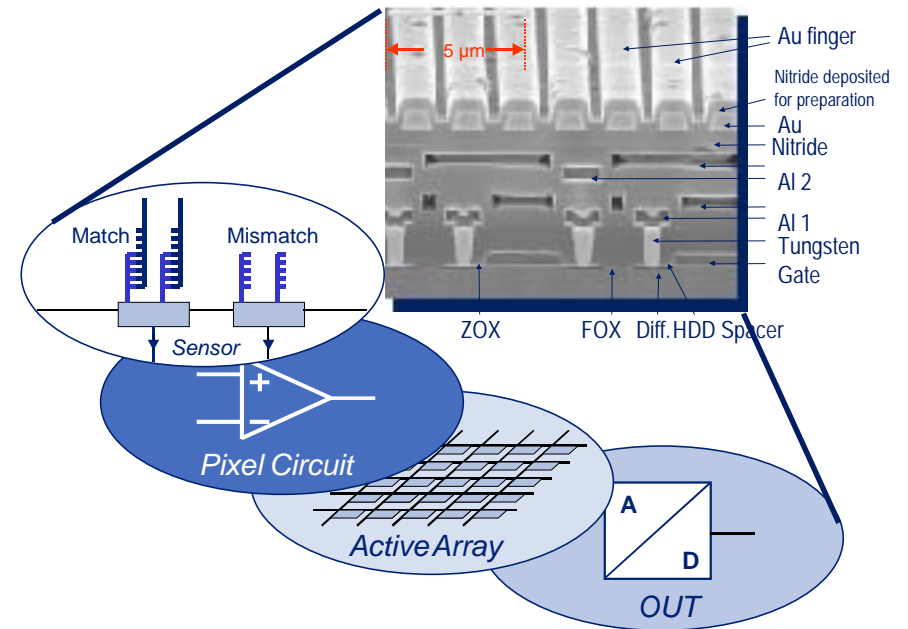


Fully Electronic DNA-chip Initial Results



Chip photo:
Fully electronic 16 x 8 sensor array

Technology cross section

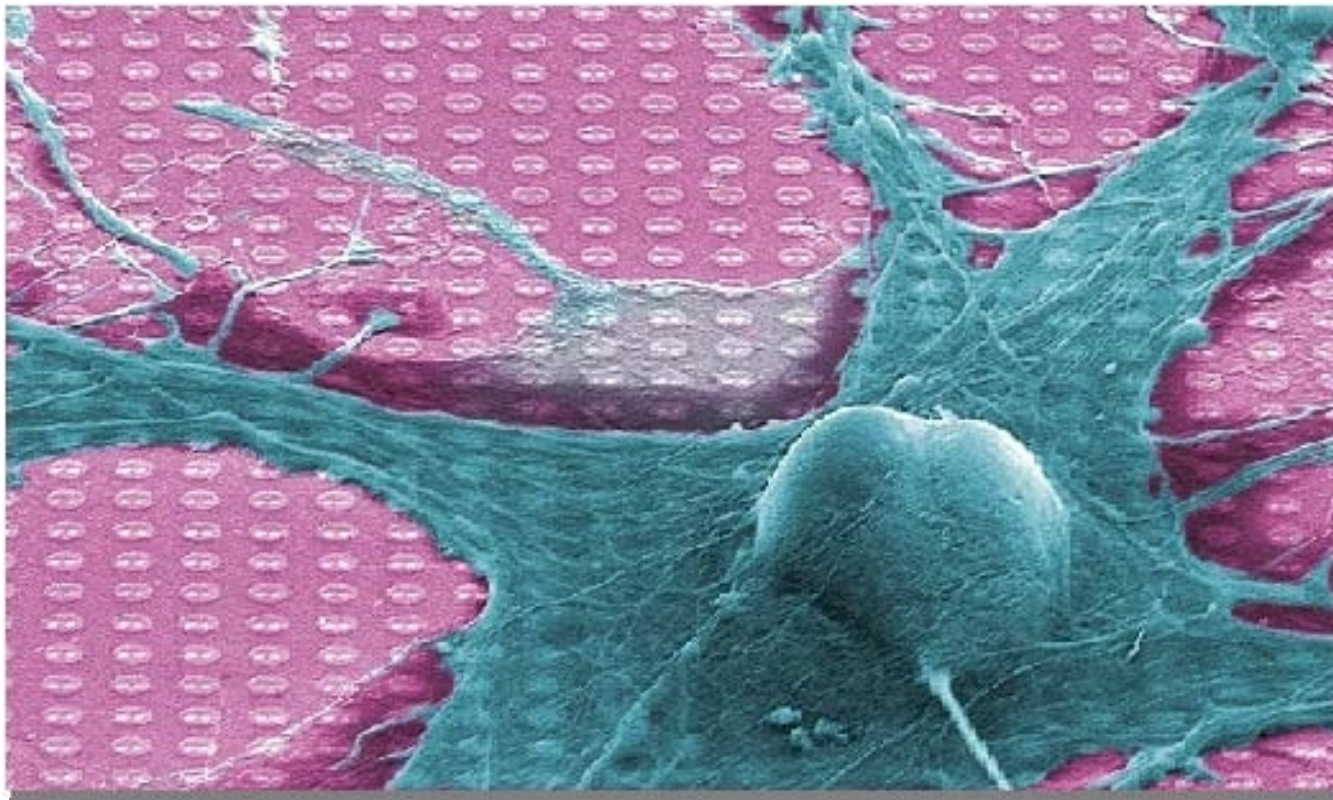


Experiments with biological material reveal successful electronic DNA detection.

Neuro-Chip

Infineon's Chip for Neurobiology and Drug Discovery

- Non-invasive long-term recording of nerve cells
- Applications in neurobiology and drug discovery

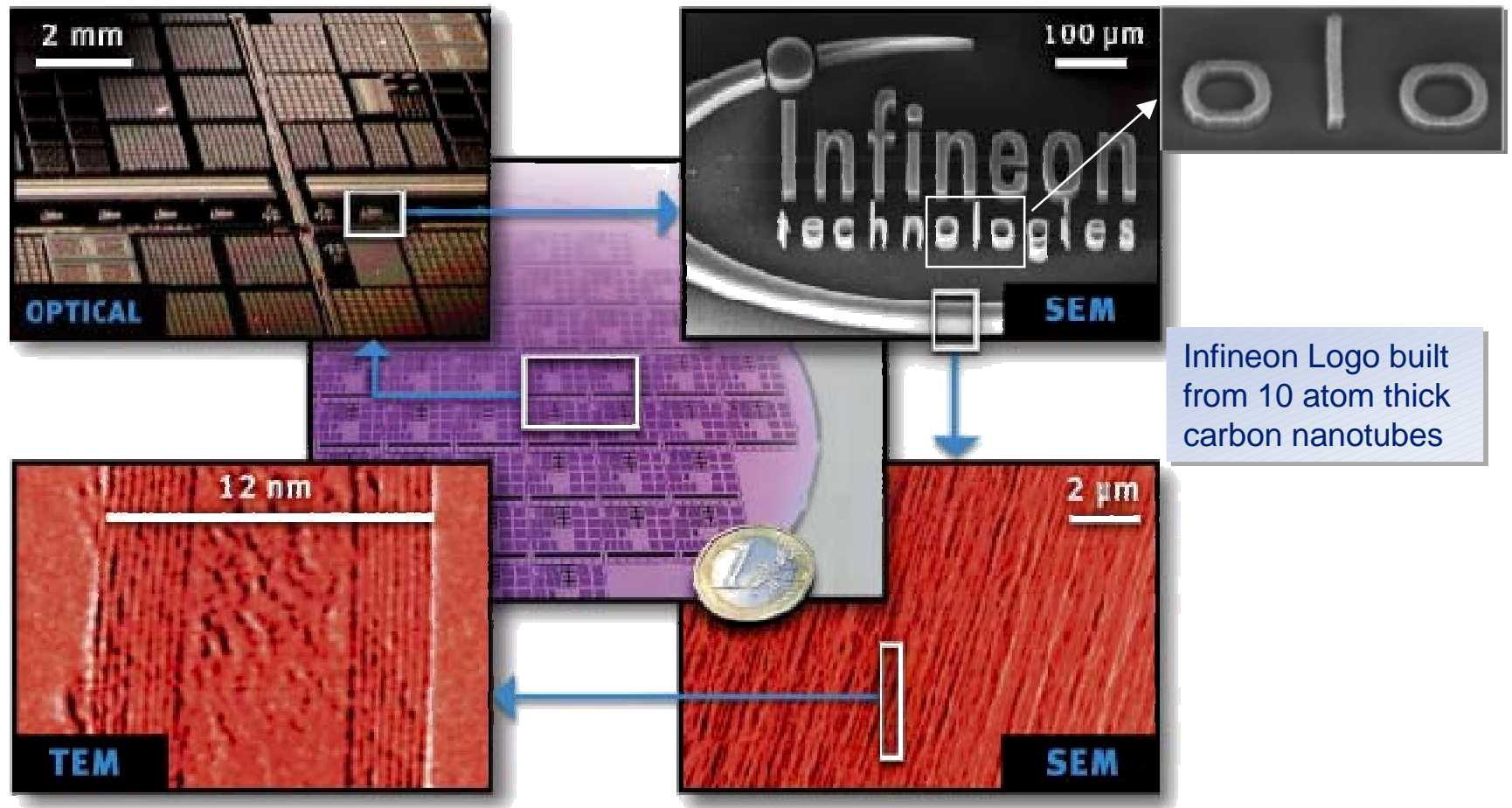


Snail cell
grown on the
biocompatible
surface of the
Neuro-Chip

From Microelectronics to Nanoelectronics



Carbon Nanotubes





Never stop thinking.