

# ResearchTransfer to create Business start-ups

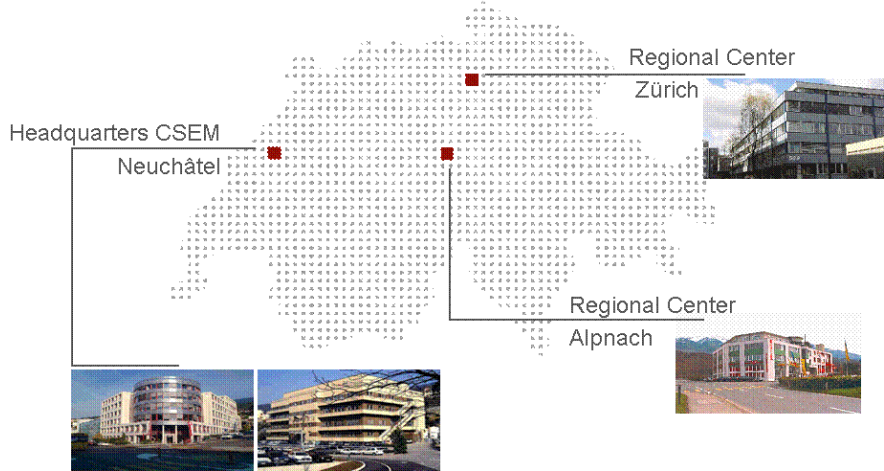
G. Kotrotsios

CSEM SA

VP Marketing and Business Development

November 20<sup>th</sup>, 2007

# The company

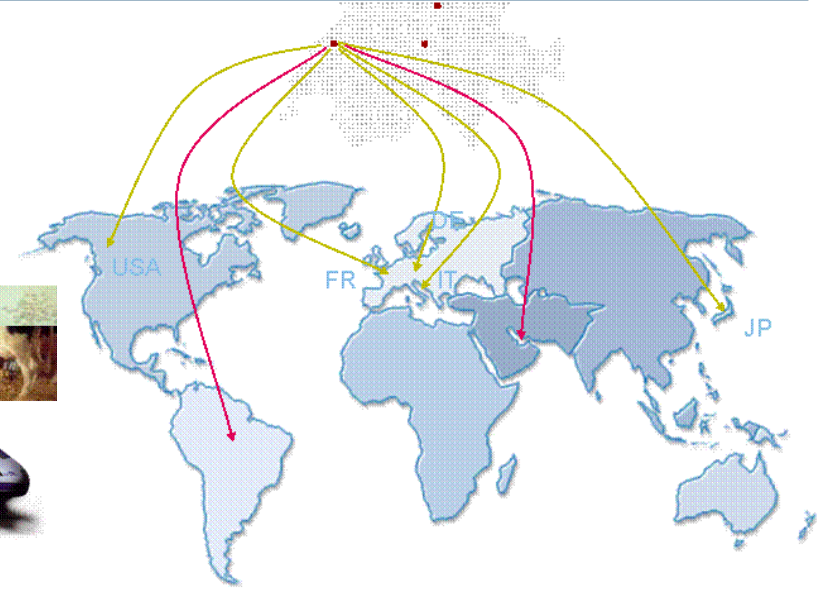


*Private company, incorporated, since 1984 with about 70 Shareholders*

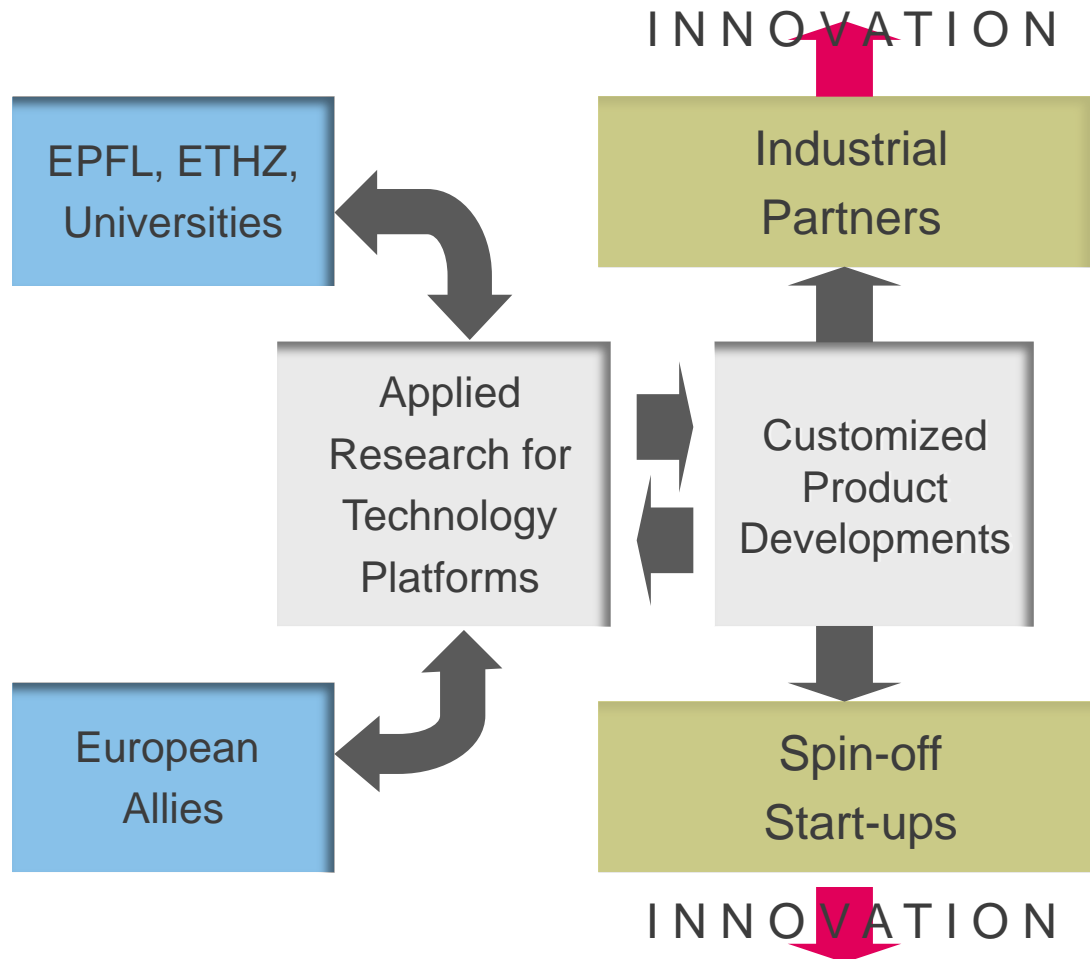
*2006 :  
Revenues ~ 53 MCHF, Employees ~ 340*

*Activities: Applied research, industrialization of technologies and product development*

*Contract with the Swiss Government for the development of new technology platforms*

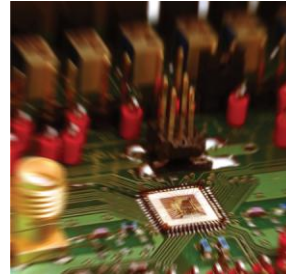


# CSEM: valorizing technology platforms

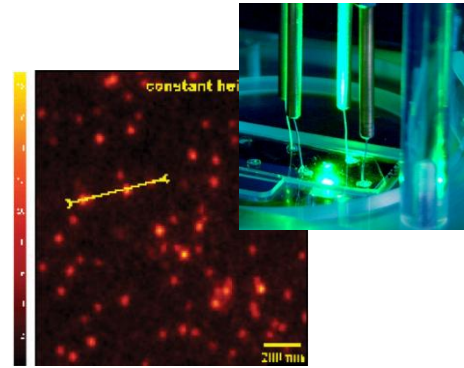
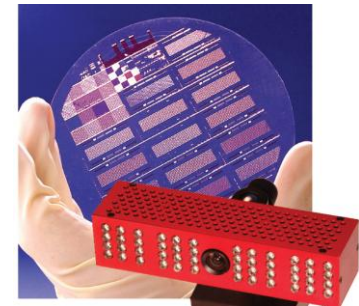


# CSEM technology platforms

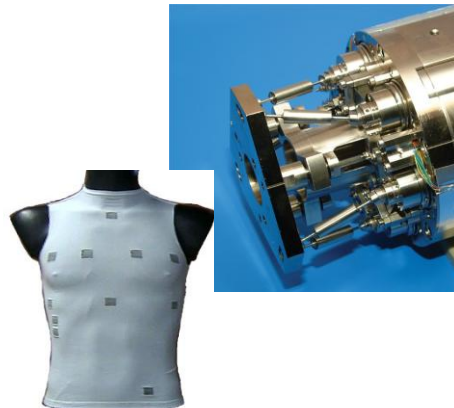
## Microelectronics



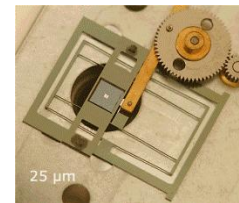
## Photonics



## Nanotechnology



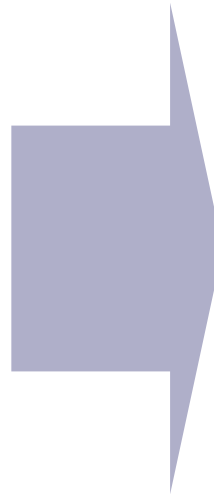
## System Engineering



## Microtechnology

# Activities and Markets

- Microtechnology
- Nanotechnology & Life Science
- Microelectronics
- Photonics
- System Engineering



- Control Industry
- Healthcare, Biomedical
- Security and Safety
- Telecom / Datacom
- Consumer Devices
- Transport
- Energy and Environment



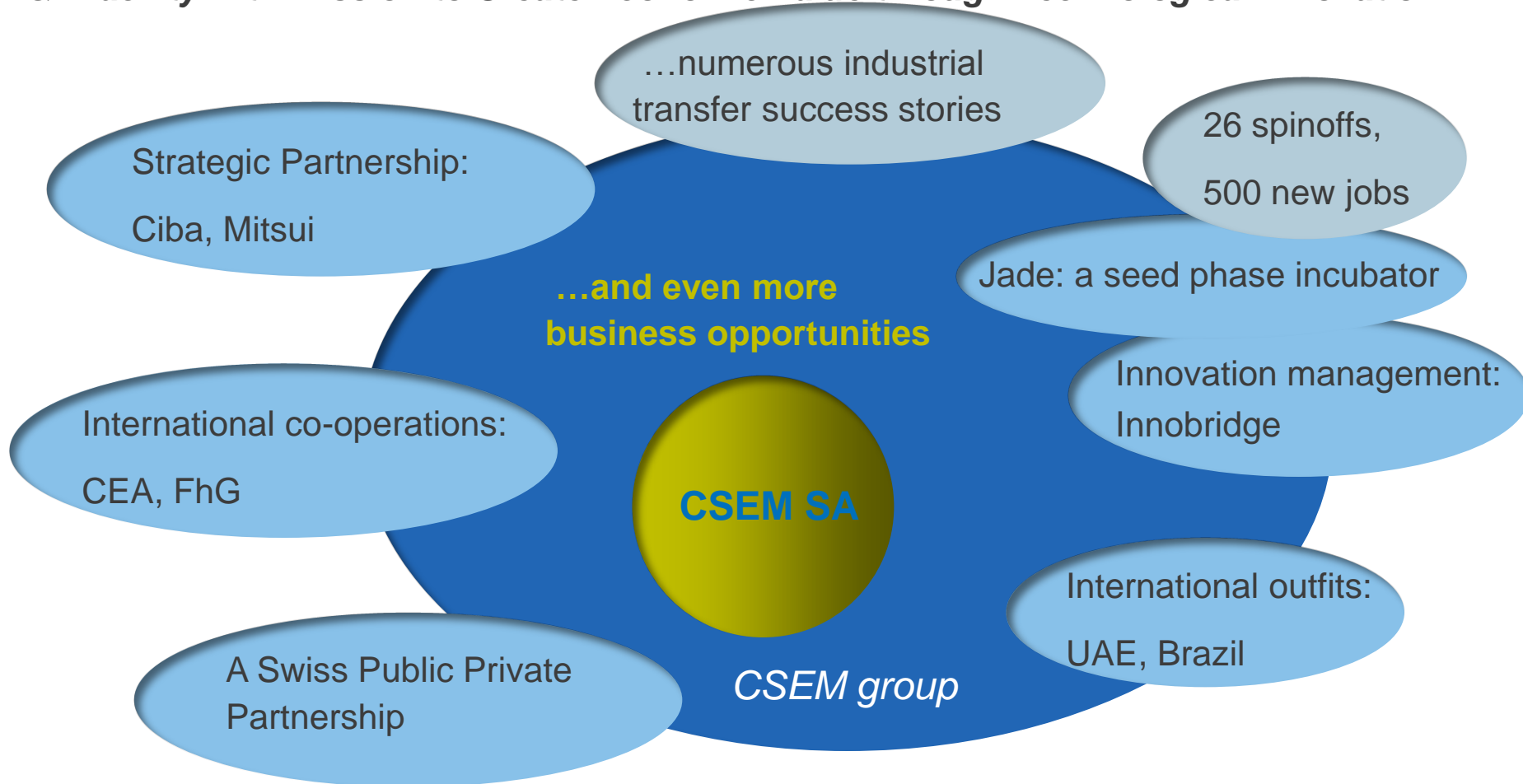
# From Technology to Business

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- Success Stories
  - From CSEM to Industry
  - From CSEM to Spin-offs and Start-ups
- Business Opportunities

# CSEM: a motor for innovation

*R&D facility with mission to Create Economic Value through Technological Innovation*



# CSEM technology in its start-ups



- Revenues (2006): ~ 40 M€
- VC Capital (1998-2006):  
More than 120 M€
- More than 500 new Jobs

# Jade – Invest: the mission



## ▼ Mission

- ▶ Profile & Organization
- ▶ Partners
- ▶ Investment Strategy
- ▶ Process
- ▶ Portfolio

## Mission

- Analyze and select attractive high-tech investment opportunities
- Develop and increase the value of our portfolio investments
- Create profitable returns and while minimizing risks
- Create alliances with strong partners and renowned technology institutions
- Participate in the development and expansion of innovative start-ups

# Jade Invest: the partners

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- CSEM
- Absolute Private Equity
- Delarive Group
- Innobridge SA

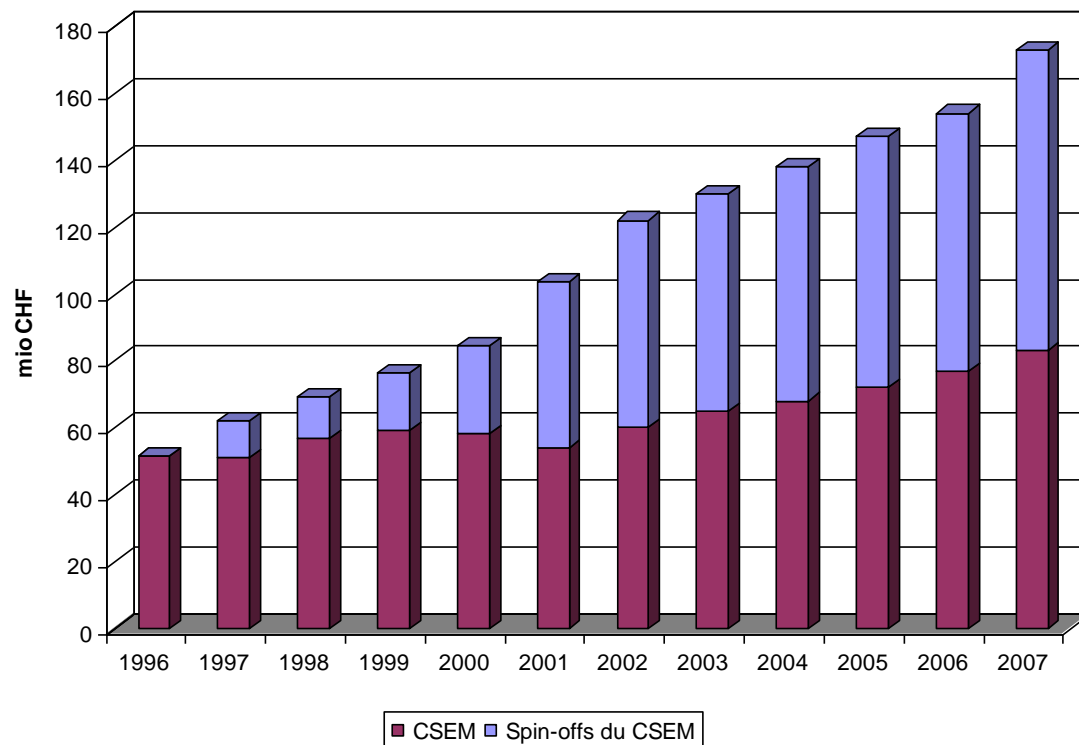
# Innobridge: Technology Management Company



Innobridge and its mother company, CSEM, support your organization in accelerating your innovation process.

# CSEM and its start-ups revenues

**Compound annual  
growth rate 1996-2004:  
10%**



# Microsens SA *in 1990*

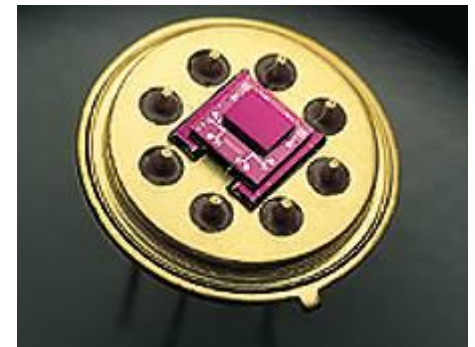


Core activities – integrated chemical sensors

- Detection of toxic or explosive gases
- pH and specific ion concentration measurements

Contact

- Microsens SA  
Rue Jaquet-Droz 1  
2007 Neuchâtel (Switzerland)
- [www.microsens.ch](http://www.microsens.ch)  
[info@microsens.ch](mailto:info@microsens.ch)



# Litomask SA (actually Photronics Inc.) in 1994 LITOMASK

## Core activities

- Photomask manufacturing

## Buy-out

## PHOTRONICS

- On April 1, 1996, Photronics Inc. (USA) acquired Litomask to expand its manufacturing network in Europe

## Contact

- PHOTRONICS, INC.  
15 Secor Road  
Brookfield, Connecticut 06804 (USA)
- [www.photronics.com](http://www.photronics.com)

Core activities

- Fabless developer of ultra-low power analog, radio frequency (RF) and digital integrated circuits (IC)

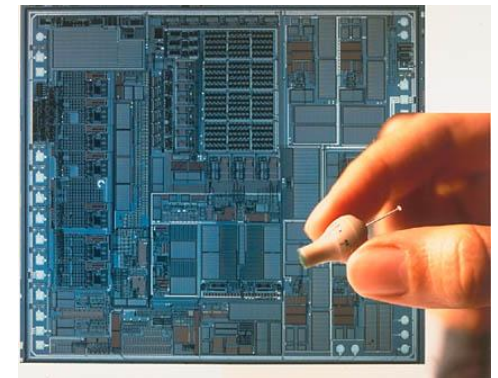
Buy-out

- On June 24, 2005, SEMTECH Corp acquired Xemics SA to be referred as Semtech's Wireless and Sensing Products business unit



Contact

- Xemics SA  
Monruz 2  
CH-2000 Neuchâtel (Switzerland)
- [www.xemics.ch](http://www.xemics.ch)



CSEM's start-ups and spin-offs  
**CSM Instruments SA in 1998**

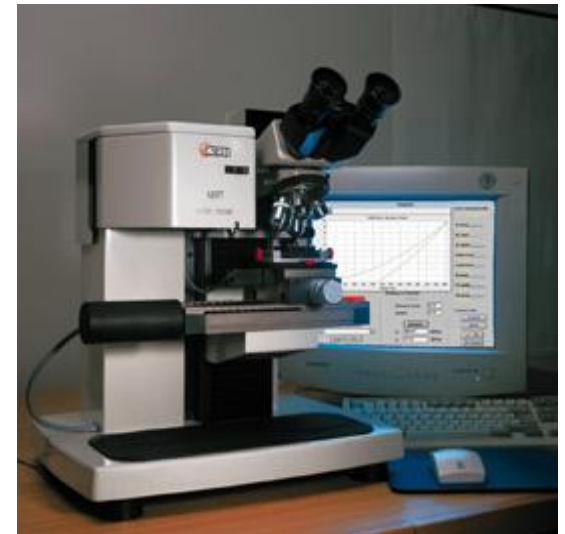


Core activities

- Advanced mechanical surface testing equipment

Contact

- Gare 4  
Galileo Center  
CH-2034 Peseux (Switzerland)
- [www.csm-instruments.com](http://www.csm-instruments.com)  
[info@csm-instruments.com](mailto:info@csm-instruments.com)
- Offices in Germany and USA



# Avalon Photonics AG *in 2000*

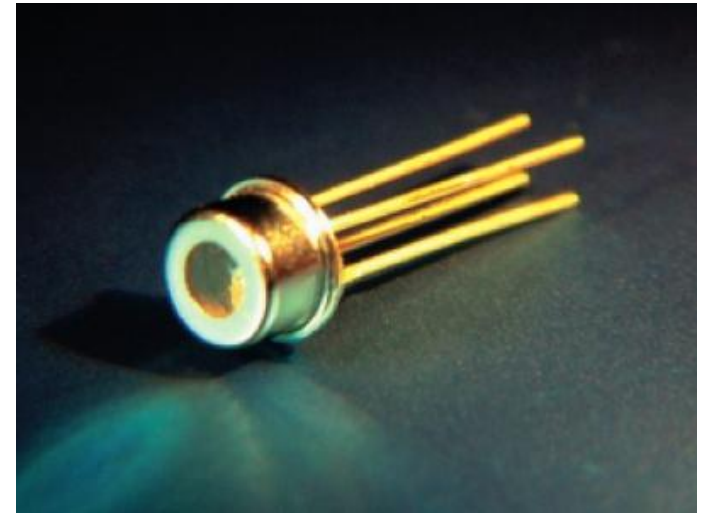


## Core activities

- Production of VCSEL chips, arrays and subassemblies for sensing and datacom applications

## Contact

- Avalon Photonics AG  
Badenerstrasse 569  
CH-8048 Zurich (Switzerland)
- [www.avap.ch](http://www.avap.ch)  
[info@avap.ch](mailto:info@avap.ch)



## Heptagon SA *in 2000*

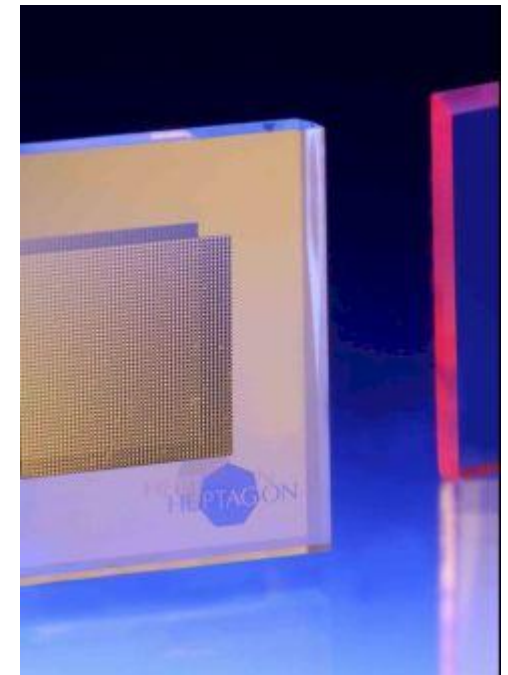


### Core activities

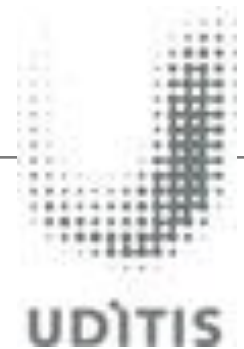
- Design, prototyping and manufacture of diffractive optics and micro-optics

### Contact

- Heptagon Oy  
Zweigniederlassung Rüslikon/Zürich  
Moosstrasse 2  
CH-8803 Rüslikon (Switzerland)
- [www.heptagon.fi](http://www.heptagon.fi)  
[info@heptagon.fi](mailto:info@heptagon.fi)



# UDiTIS SA *in 2000*



## Core activities

- Information technology and system developments
- SAP solutions

## Contact

- UDITIS SA  
Rue de la Gare 4  
CH-2034 Peseux (Switzerland)
- [www.uditis.ch](http://www.uditis.ch)  
[info@uditis.ch](mailto:info@uditis.ch)



# Colibrys SA *in 2001*



## Core activities

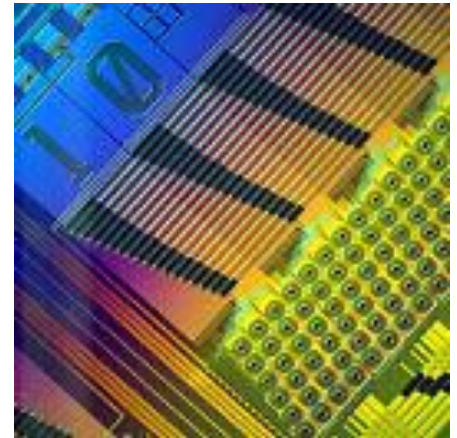
- Development, manufacturing and commercialization of advanced microsystems, custom MEMS and related services

## Acquisition

- On December 17, 2004, Colibrys acquires the Applied MEMS subsidiary from Input/Output Inc (USA)

## Contact

- Colibrys SA  
Maladière 83  
CH-2007 Neuchâtel (Switzerland)
- [www.colibrys.com](http://www.colibrys.com)  
[sales@colibrys.com](mailto:sales@colibrys.com)



# POSIC SA *in 2001*

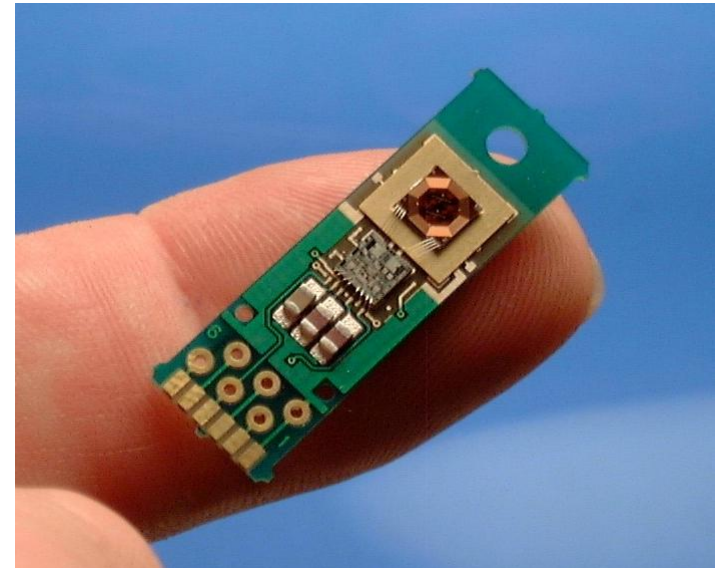


## Core activities

- Development, manufacturing and commercialization of microcoil inductive position sensors for motion control applications

## Contact

- Posic SA  
Rue Jaquet-Droz 1  
CH-2007 Neuchâtel (Switzerland)
- [www.posic.com](http://www.posic.com)  
[info@posic.com](mailto:info@posic.com)



## Core activities

- Development of specific imaging systems in the field of scientific instrumentation for space exploration

## Contact

- Space-X SA  
Rue Jaquet-Droz 1  
CH-2007 Neuchâtel (Switzerland)
- [www.space-x.ch](http://www.space-x.ch)  
[info@space-x.ch](mailto:info@space-x.ch)



# arrayon biotechnology SA in 2004

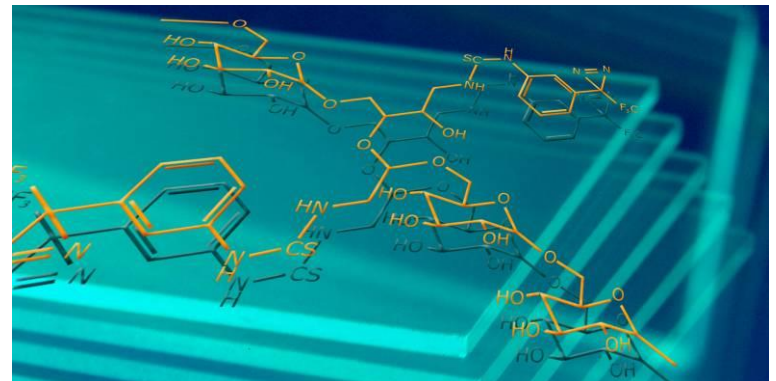


## Core activities

- Development and commercialization of products for the biochip and textile markets

## Contact

- arrayon biotechnology SA  
Rue Jaquet-Droz 1  
CH-2007 Neuchâtel (Switzerland)
- [www.arrayon.com](http://www.arrayon.com)  
[info@arrayon.com](mailto:info@arrayon.com)



# The Time-of-Flight Camera Story

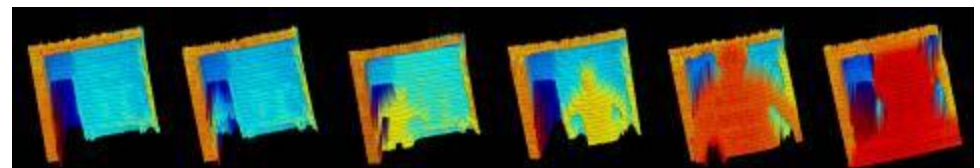
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- From expertise to specific development,
- From specific development to:
  - A first market: Safety Market elevators
  - A second market: Automotive
  - Prototypes to: Multiple markets
  - A spinoff company: Mesa Imaging AG
  - New spinoff companies: Heliotis

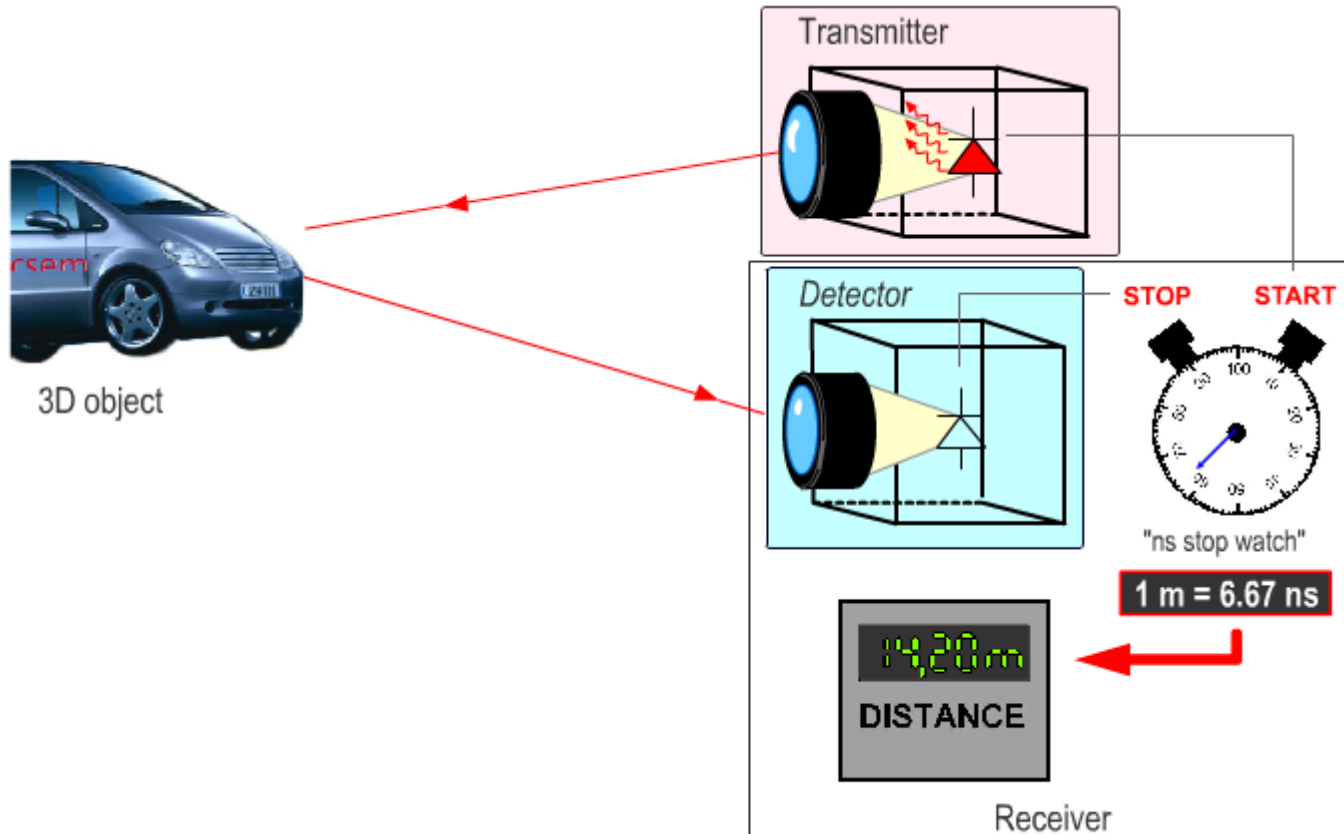
# CSEM Swiss Ranger SR-2

The 3D camera is based on the optical time-of flight principle and the use of a dedicated image sensor with smart “lock-in” pixels.

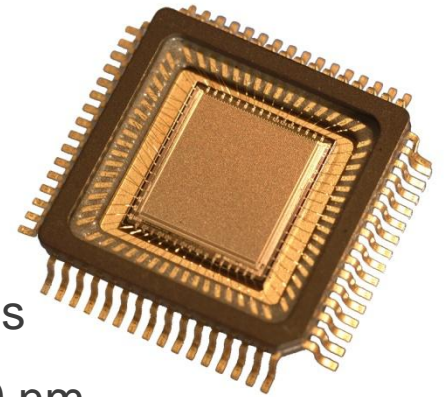
- Compact & cost-effective
- High-speed
- Robustness
- Ease of use



# CSEM Swiss Ranger Time-of-Flight Principle



# Image sensor and camera



- Spatial lateral resolution
- LED illumination
- Modulation frequency
- Non-ambiguity range
- Depth resolution
- Frame rate

160 x 124 pixels

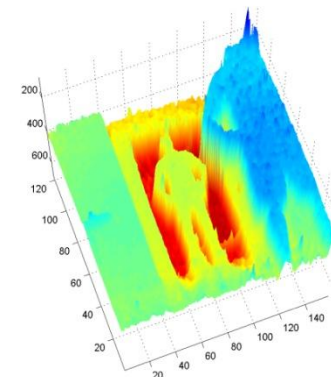
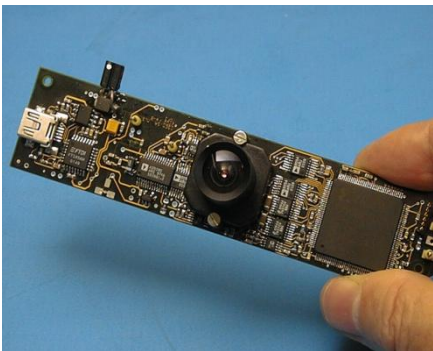
800 mW at 870 nm

20 MHz

up to 7.5 m

down to 5 mm

up to 100 fps



# IST Grand Prize Winner 2004



**CEDES**

&

**csem**

*“The European IST Prize is an award for groundbreaking products that represent the best of European innovation in information technology. It provides public recognition and a highly visible profile to entrepreneurial teams that excel in generating novel ideas and R&D and converting them into marketable products”*

# Examples of 3D Images



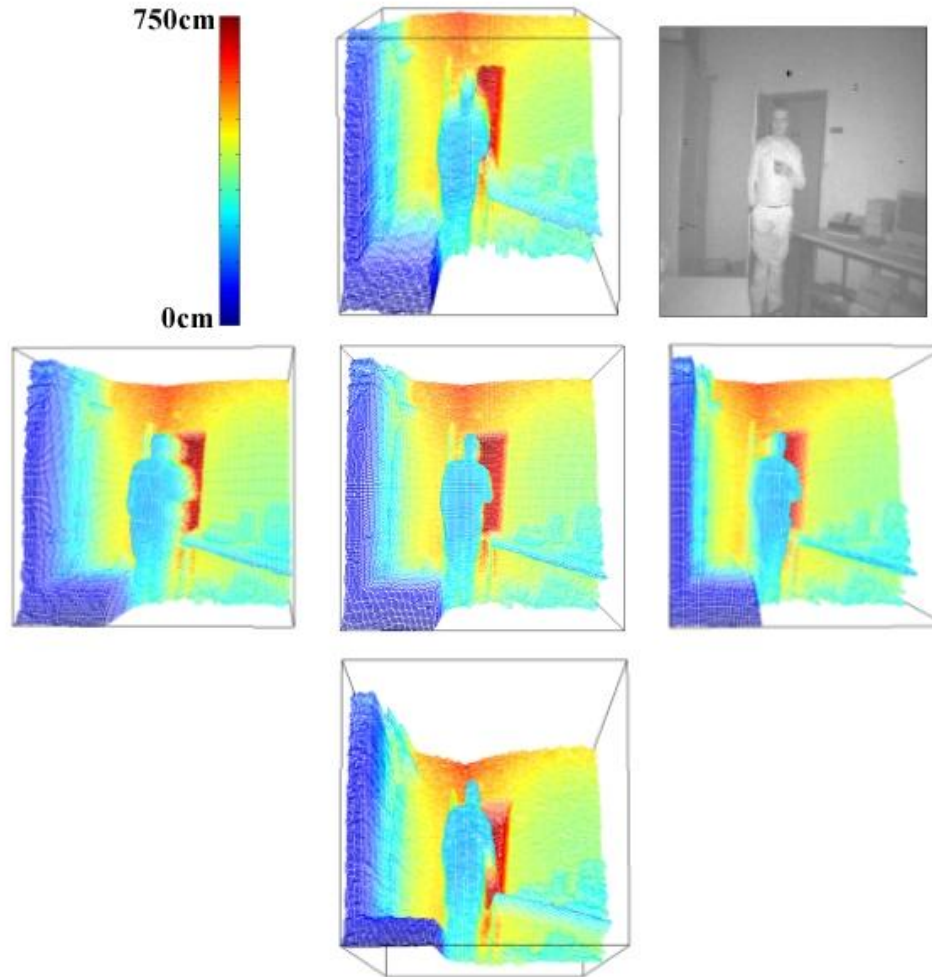
2D



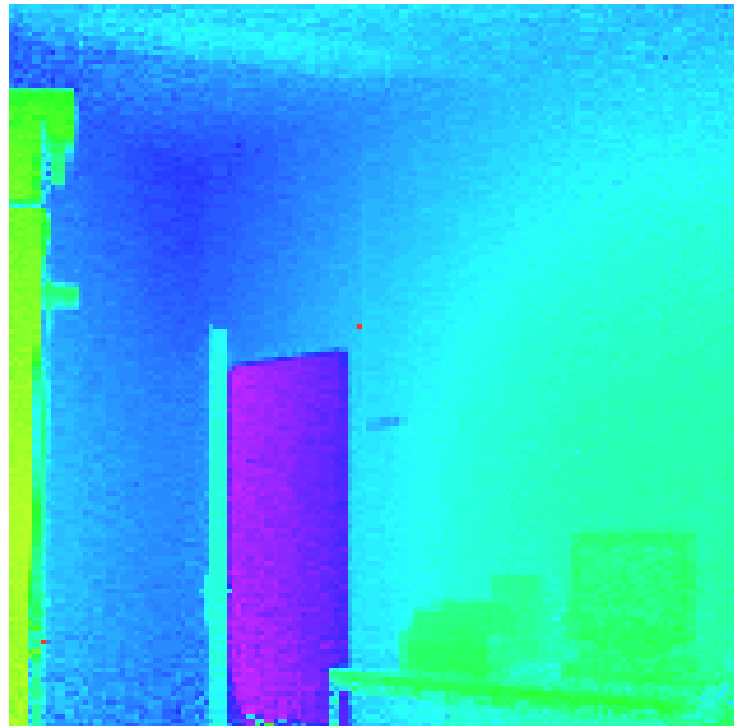
3D



# Examples of 3D Images (cont.)

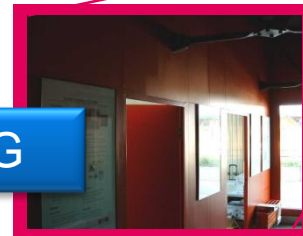
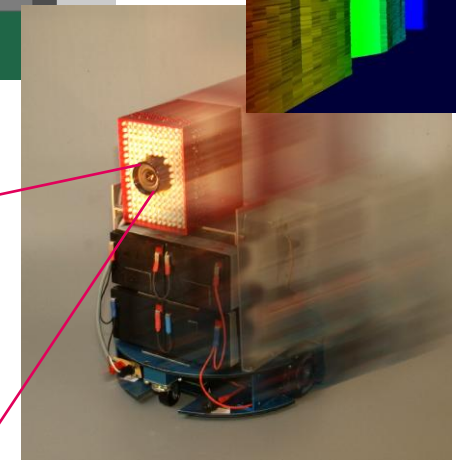
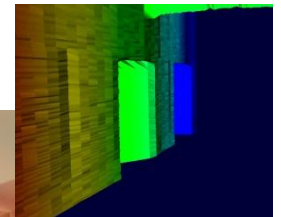
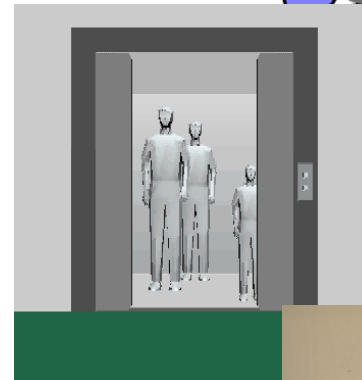
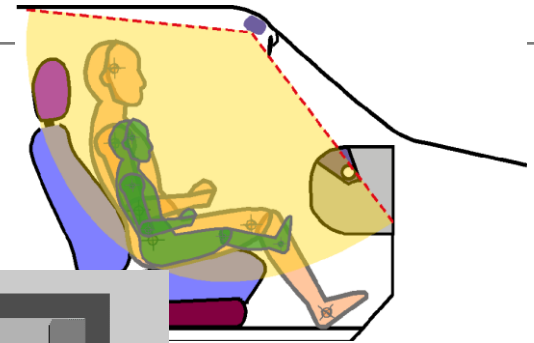


# Example of 3D Image Sequence



# Business Opportunities

- Automotive
- Safety, security and surveillance
- Industrial automation
- Robot vision
- Autonomous guided vehicles
- Domotic
- Entertainment
- ... and many more



A new spin-off Company: Mesa Imaging AG

## .and a lever to other spinoffs: Heliotis



a start-up initiative of Zentronica and CSEM

### Core activities

- Development and commercialization of parallel optical low-coherence tomography (pOCT) for 3D machine vision and low-cost biomedical imaging

### Contact

- Heliotis  
Badenerstrasse 569  
CH-8048 Zürich (Switzerland)
- [www.heliotis.ch](http://www.heliotis.ch)  
[info@heliotis.ch](mailto:info@heliotis.ch)



**Thank you for your attention.**