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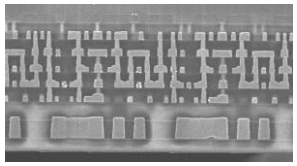
Competitive cluster
Micro-Nano Technologies and Embedded Software
Grenoble - Isère / France

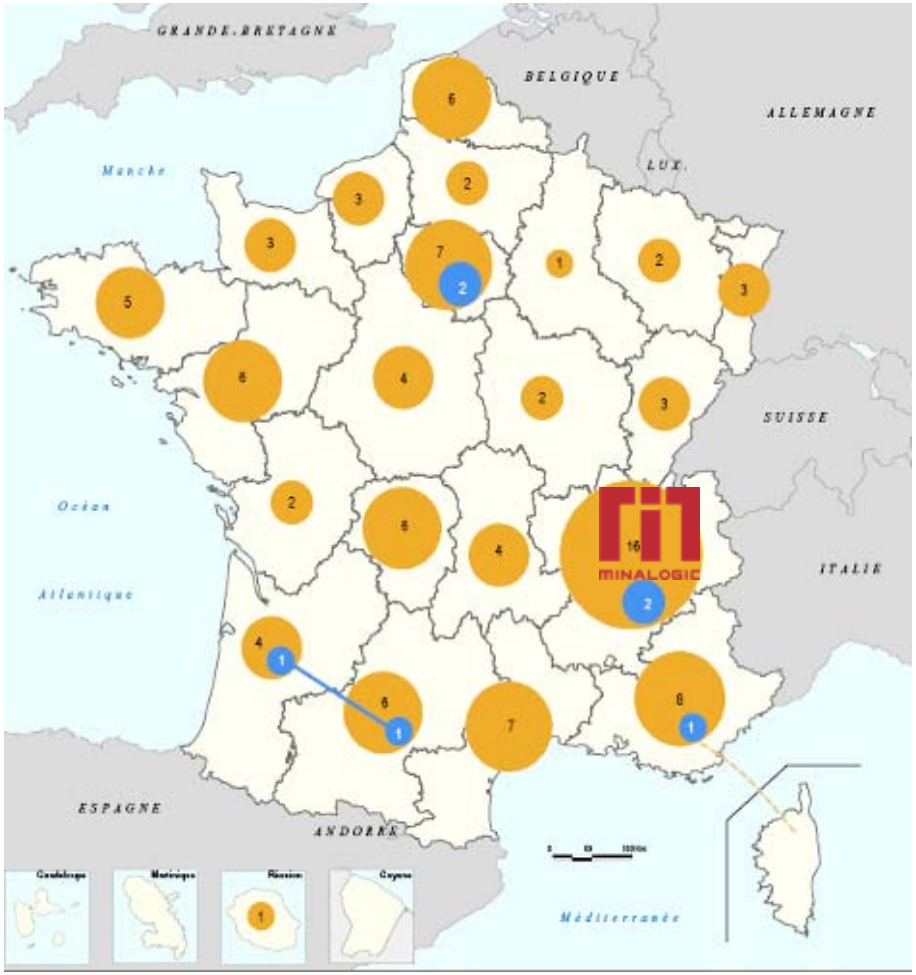



What is a Competitive Cluster?

Within a **well defined geographical area,** a cluster gathers

- **industries**,
- **research centers and**
- **education institutions**

→ working in **partnerships** (at least 2 industrials and 1 research lab) **to create synergies around innovative projects based on complementary technologies**



71 clusters in France

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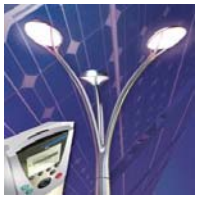
About Minalogic

Domain	**Micro- nanotechnologies and embedded software** **→ Nanoelectronics**
Location	**Grenoble/France, the French Silicon Valley**
Goal of our innovative projects	**Create and develop new products and smart miniaturized solutions -** differentiated by their level of miniaturization, embedded intelligence and connectivity **- for the industry**
Mass/Jobs	**micro & nano technologies > 24 000** **embedded software > 13 000** **Over 3500 degrees/year**



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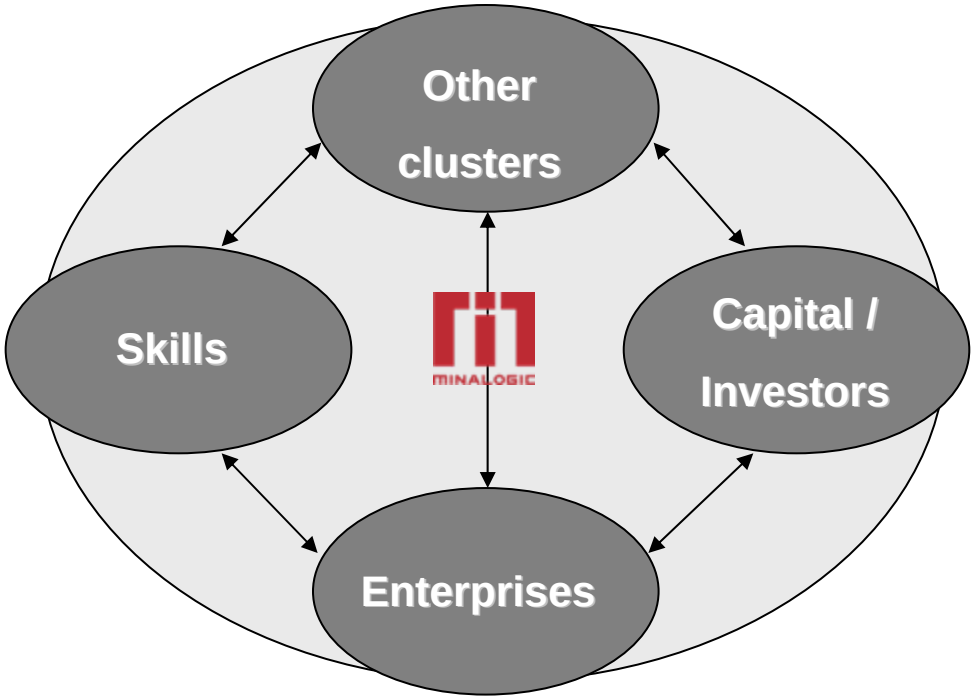
Minalogic, in the middle of “coopetition”

- Technology transfers
- Common research projects
- European collaboration

- Scientists and researchers, graduates and Ph.D.’s
- Hi – Tech entrepreneurs
- Universities and Technology Institutes
- Business schools & human sciences



- Business angels
- Seed investors / incubators
- Centres of excellence in R&D
- Research Projects funded by Public Capital
- Technology Platform (Minatec)
- Network of venture capitalists

- Focus on product and process innovation
- Resources in R&D
- SMEs, groups, start-up

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An animated & structured innovation network

- **115 Members to foster coopetition!**
  - 78 companies, including 75% of SMEs
  - 12 research centers and universities
  - 15 local governments
  - 7 economic development organizations
  - 3 private investors

- **So Minalogic is not a technology park**
  - Includes research centers and technological platforms **but also**
  - Associates companies that integrate the technologies developed locally
  - Associates financial partners
  - Includes non technical skills & competencies (business schools, human sciences, …)

- **Minalogic is an independent non profit association mainly financed by membership fees**

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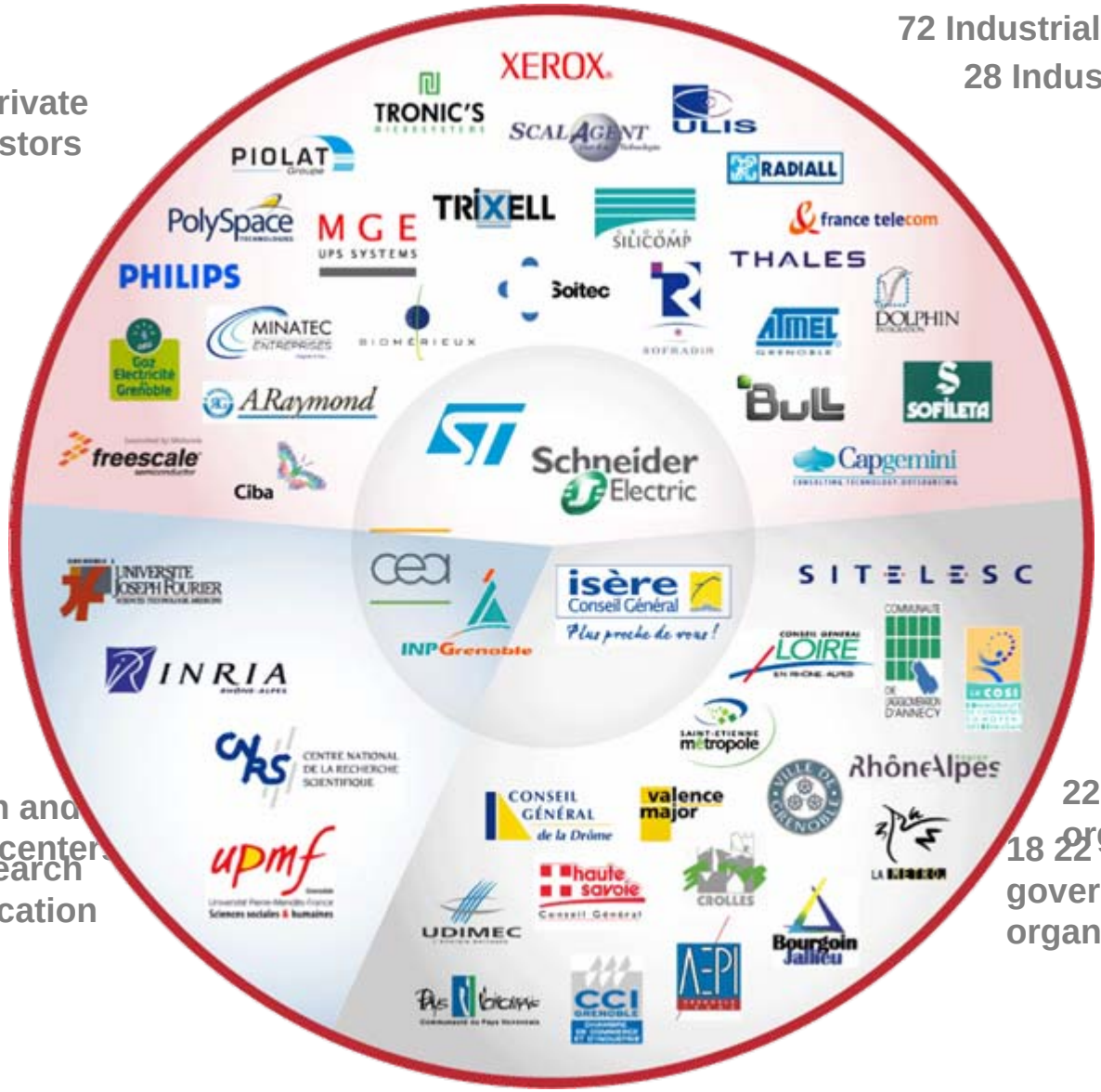
From 152 founding partners…



72 Industrials

28 Industrials

- 3 Private investors

SME represents 60% of "entreprises"

44 companies joined since creation

6 Research and education centers

- 13 Research and education centers

22 local government organisations

18 22 local government organisations

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More information about Minalogic

Grenoble, THE place for micro nano AND software

Micro nano

Software

Academic Research	**3,000 jobs**	**Academic Research**	**1,800 jobs**
Industry	**21,700 jobs**	**Industry**	**12,000 jobs**
Total	**24,700 jobs**	**Total**	**13,800 jobs**
Degrees/year	**1,000**	**Degrees/year**	**2,550**

Key players

CEA-Leti/Minatec, CNRS
University Joseph Fourier, INPG
STMicroelectronics
Soitec
Applied Materials
E2v Semiconductors
NXP Semiconductor
Freescale Semiconductor
ARM
Schneider Electric
Lam Research,etc…

IMAG, INRIA
Bull, HP
Sun Microsystems
France Telecom
Yahoo/Kelkoo
Polyspace
Cap Gemini
Silicomp
Purple labs
Xerox Research Center
Mentor Graphics - Synopsys
CWS, Design& Reuse, Dolphin integration…

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A Key Success Factor: Grenoble's ecosystem

Grenoble gathers :

- Big companies and SMEs leaders in their domains
- Very active research labs (CEA Leti, TIMA, Verimag, INRIA…)
- Successful partnerships such as Alliance Crolles 2
- Prestigious universities and Technology Institutes
- Unique infrastructures such as Minatec, Synchrotron…
- A great support from local institutions
- A critical mass of about 40,000 people in the field of micro-nano technologies, embedded software and ICT

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Minalogic strategy

Move the competition battle from the field of production costs to that of innovation speed, enriched product feature sets and services.

- Why?

Mass market and traditional manufactured products become commodities

- Aggressive competition from low production cost countries
- Copies of new products come fast

- How?

Design highly differentiated products that are both

- Miniaturized
- Smart and Communicating

Release innovations faster and more frequently

Develop services businesses around products

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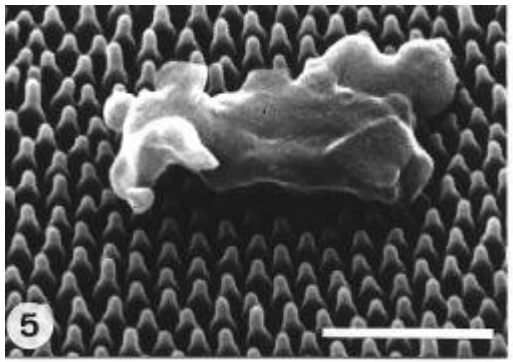
Nanomatérials

- window glass, autocleaning opticals (by rain drops)
- anti-freeze plane wing
- anti-adhére sticking against pollution, bactérias, etc…

From nature

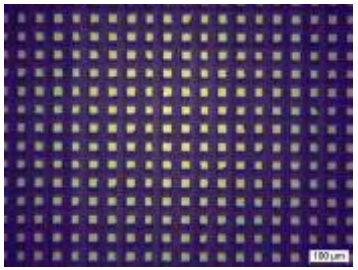
- Capucine

- Nanocils hydrophobes

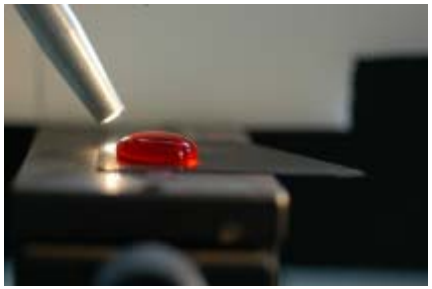


To artificial

- Silicon surface + PECVD of
- Six-Oy-Cz hydrophobe



- Same behavior
- Antisticking



And application

- Autocleaning surfaces

- Source CEA Grenoble

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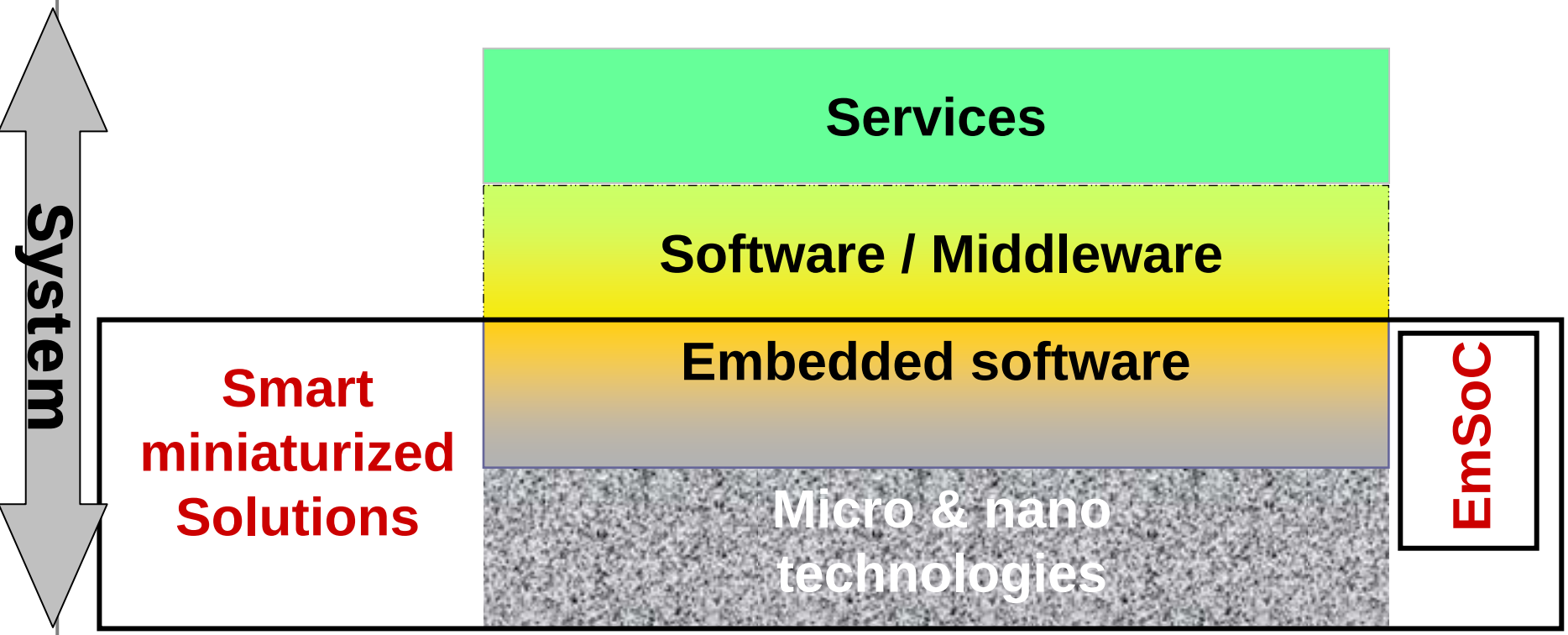
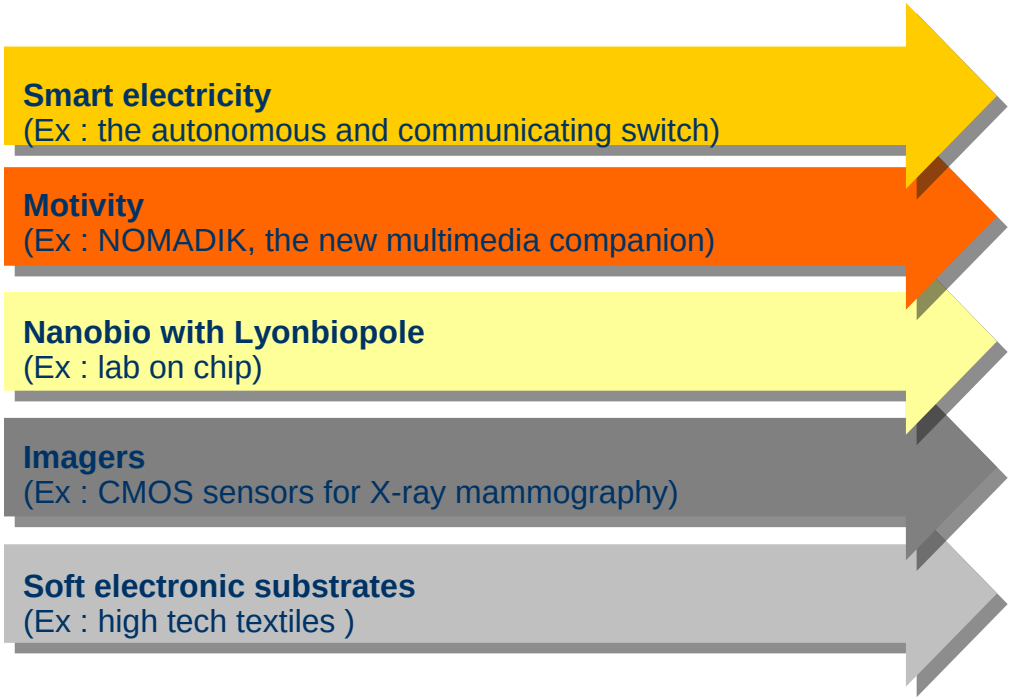
A Two-level Implementation

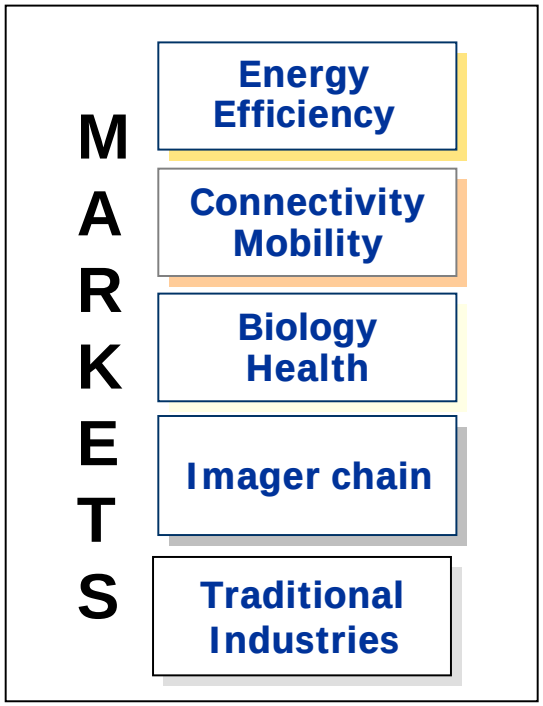
1 - **Strengthen the micro nanotechnology and embedded software foundations**



A Two-level Implementation

2 - Develop solutions, highly differentiated by their level of miniaturization, embedded intelligence and connectivity





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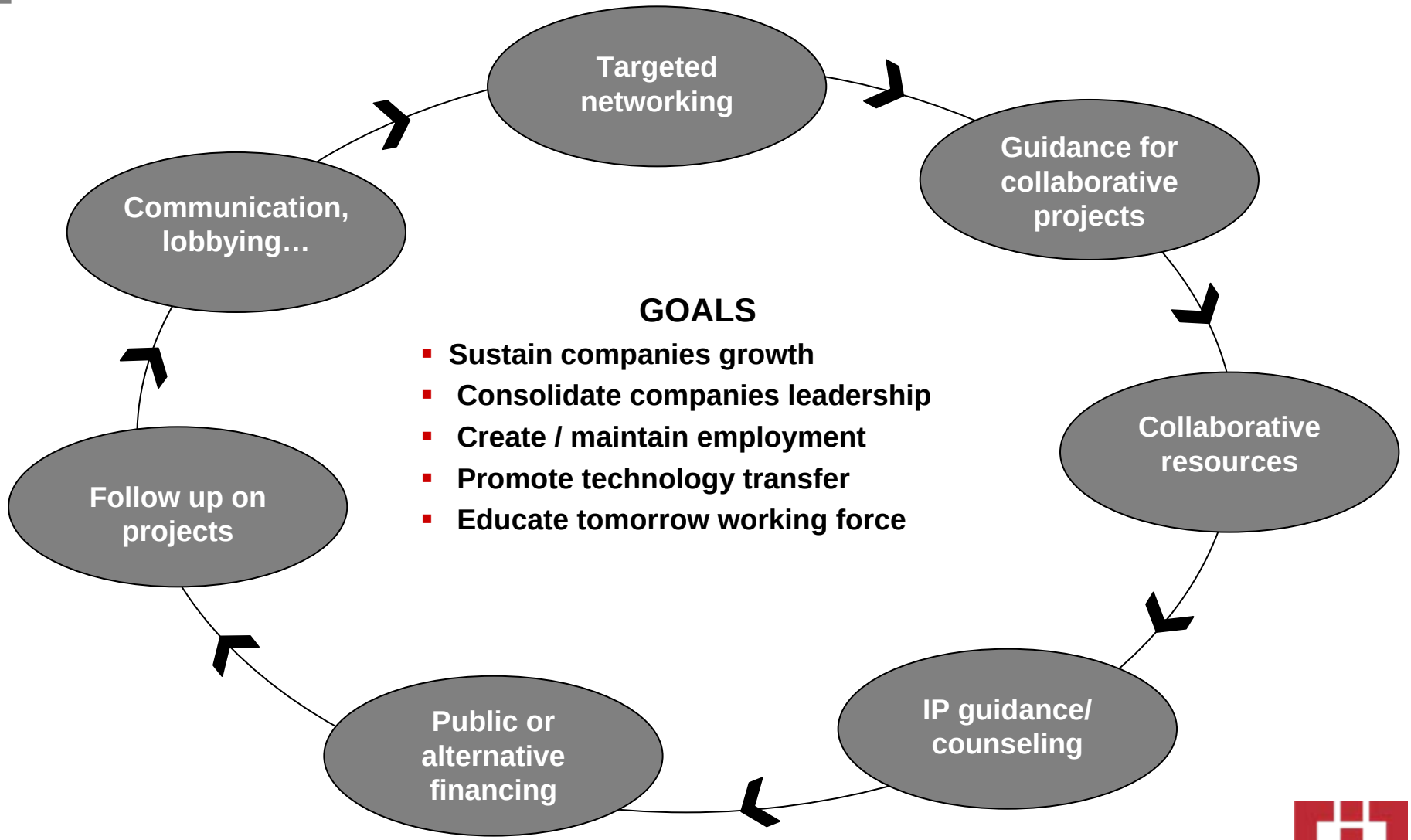
Minalogic activities



Current Minalogic Projects

Micro- and nano-technologies / Electronic devices

- **Nanosmart center -** Advanced substrate for microelectronics
- **Foremost -** Full CMOS 45 nm process technology
- **Imalogic -** Imaging detectors for professional applications (IR detection, X-Ray)
- **Vis Imalogic -** Cameras dedicated to industrial machine-vision applications
- **Minimage -** Imaging for consumer applications (mini-camera)
- **MAX6 -** New generation of MEMS 3 axis accelerometers and 3 magnetometers
- **FAST -** Highly integrated, low cost versatile RF filters for wireless communication devices, BAW technology,
- **Hameli -** Low power robust devices for medical applications
- **Aster -** Architectures for high performance SRAM
- **Honey -** Optimization of design methodology for yield and robustness
- **Moovi -** High resolution micro display for mobile applications, gogles, camera visors

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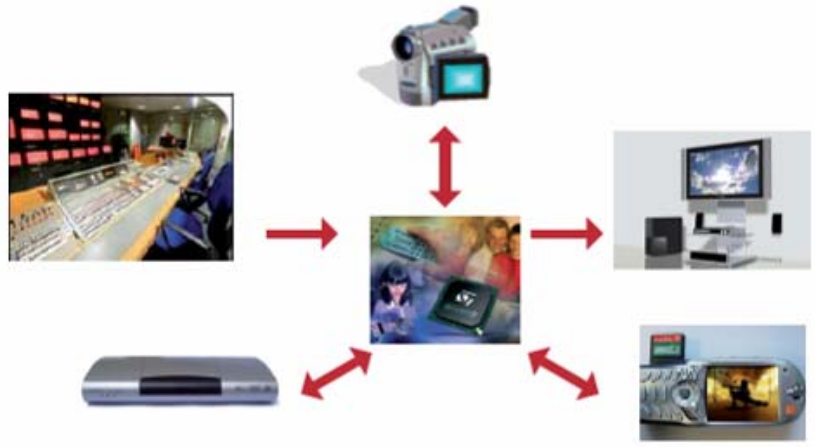
Current Minalogic Projects

Embedded System on Chip

- **«Atelier du Futur» (Workbench of the future)**

  - **Multival** - Multi-processor platform validation
  - **Sceptre** - Optimized compilation for efficient HW/SW partitioning
  - **OpenTLM** - Modeling and asynchronous validation of SoC
  - **Capri** - Efficient communication architecture for large sensor networks
  - **Verisoc** - Co-simulation, co-emulation platforms for chip validation and verification
  - **MCube** - Machine-to-machine infrastructure, services-based

- **Athole -** Low power consumption multiprocessing Architecture (NoC) for embedded devices
- **Aravis -** High performance multiprocessor asynchronous architecture for systems on chip (45, 32 and 22 nm technologies)
- **Imanum / Video4All -** High performance embedded algorithm for video encoding (H264 & AVC)



- **Nomad -** 3D man-machine interface using advanced MEMS and 3D graphics representation

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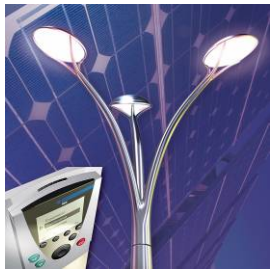
Current Minalogic Projects

Core technologies applied to industry solutions and services

- **Smart Electricity -** Energy performance management
- **Residential Smart Measurement -** Energy metering and quality
- **Printronics -** Printable polymer electronics on flexible substrates
- **Care@home -** Networked wearable sensors for in-home monitoring and care
- **Papier Intelligent -** Smart paper integrating soft sensors and batteries
- **Hibrix I & II -** Semiconductor metrology and characterisation of nano-materials
- **Papier RFID -** Cost efficient RFID tags on paper
- **VeTeC -** Sensors, wireless devices and protocols for vehicle to infrastructure communication
- **SurgiMag -** Minimally-invasive computer-assisted surgery station



Key figures

Projects certified

- **46** projects were submitted in response to five requests for proposals by the FUI *[Fonds Unique Intrerministériel],* for total funding of more than **€1.2 billion.**

- **70** projects were submitted in response to requests for proposals by the National Research Agency *[Agence Nationale de la Recherche].*

116 Members

- 78 companies, 69% SMEs
- 13 research centers and universities
- 16 local governments
- 6 economic development organizations
- 3 private investors

2006-2008 Financing

- **3** projects were financed by the AII *[Agence pour l'innovation industrielle]* for a total of **€189 million**.
- **26** projects were financed by the FUI *[Fonds Unique Interministériel]* and local governments for a total of **€98.5 M**
- **46** projects were financed by the National Research Agency, for total funding of **€43.3 M**

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More information
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