



# ***Main Results on Manufacturing in 2010***



# Technology Processes in 2010



## ICs :

**austriamicrosystems**

0.35  $\mu$  CMOS / CMOS-Opto  
0.35  $\mu$  SiGe  
0.35  $\mu$  HV CMOS  
0.35  $\mu$  HV CMOS EEPROM

**STMicroelectronics**

40nm CMOS 7LM  
65nm CMOS 7LM  
130nm CMOS 6LM

65nm SOI  
130nm SOI

130nm SiGe BiCMOS

## MEMS :

**CMP/austriamicrosystems**

0.35  $\mu$  CMOS bulk micromachining

**MEMSCAP**

**PolyMUMPS**

**MetalMUMPS**

**SOI-MUMPS**

**SANDIA**

**SUMMIT V**

**CAD Tools :**

ARM, SoftMEMS

**IP exploitation :**

ARM cores on STMicroelectronics processes (130nm and 65nm)

**Design kits :**

more than 35 different kits

**Packaging :**

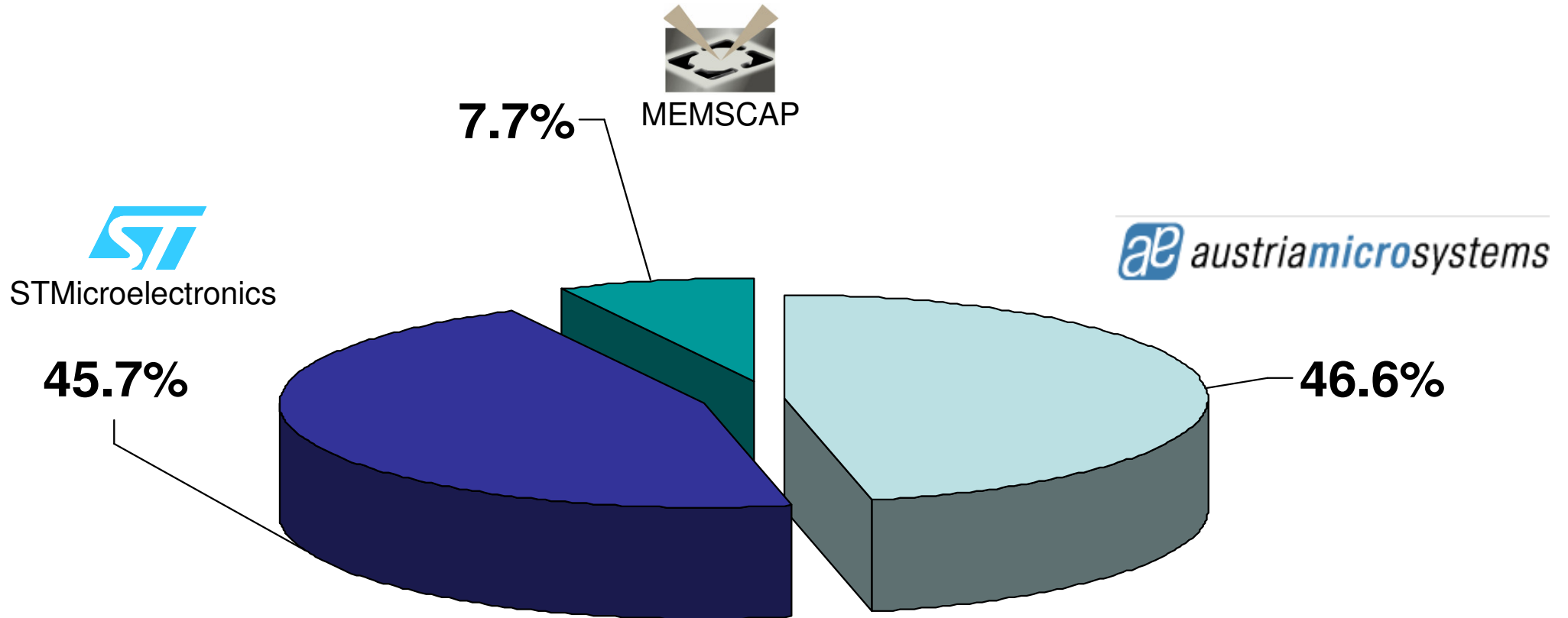
Ceramic, plastic, optical, custom ...

**354 circuits**  
**109 centres**

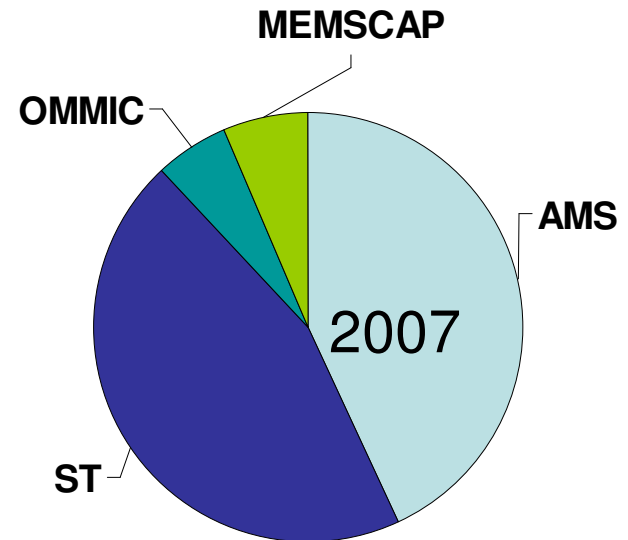
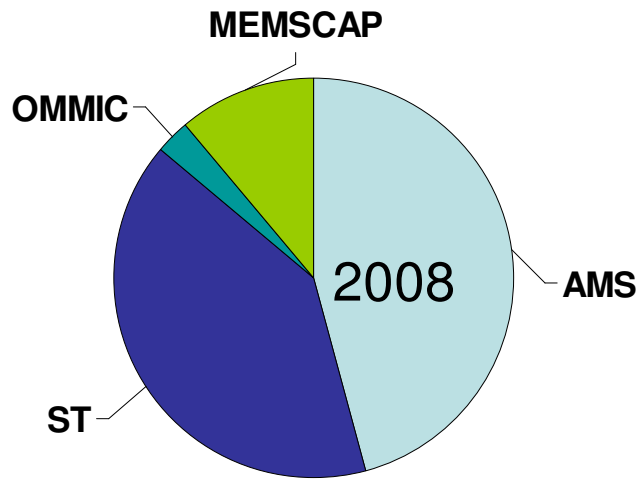
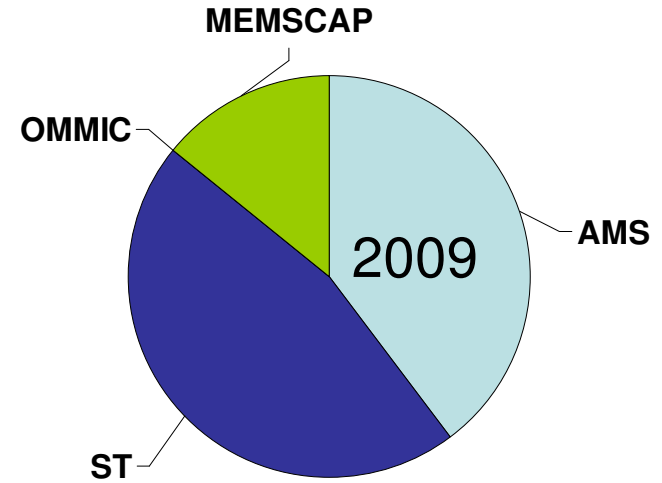
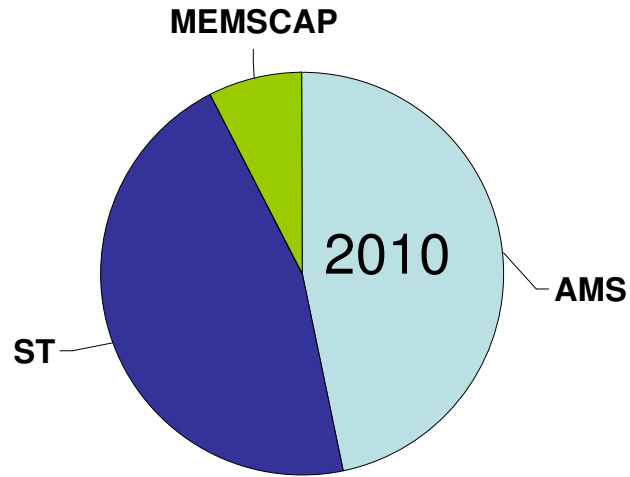
**391 circuits in 2009**  
**105 centres in 2009**

<b>Prototypes</b>	<b>331 circuits</b> <b>97 centres</b>	<b>365 in 2009</b> <b>91 in 2009</b>
<b>Low volume</b>	<b>79 circuits (+34%)</b> <b>31 centres (+30%)</b>	<b>59 in 2009</b> <b>24 in 2009</b>
<b>Indus. circuits</b>	<b>101 circuits (+20%)</b> <b>25 centres</b>	<b>85 in 2009</b> <b>28 in 2009</b>

# Circuits per foundry in 2010

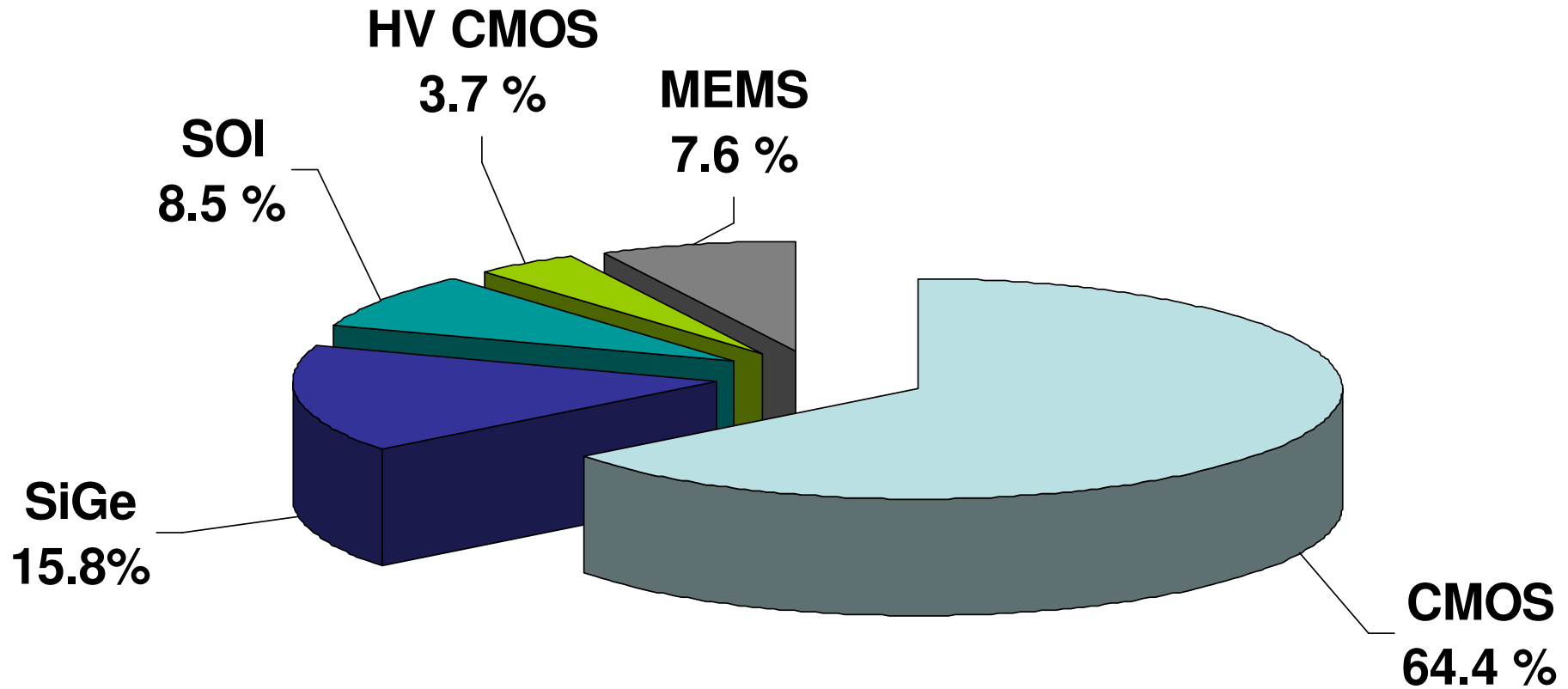


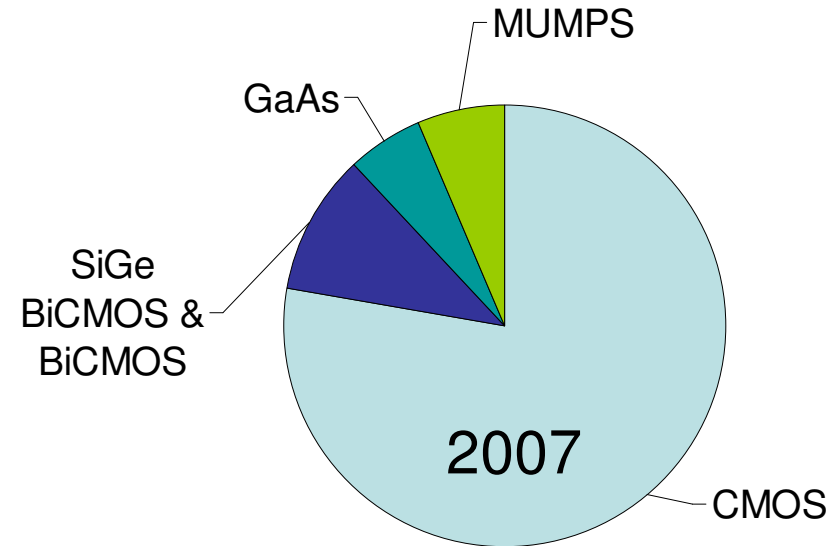
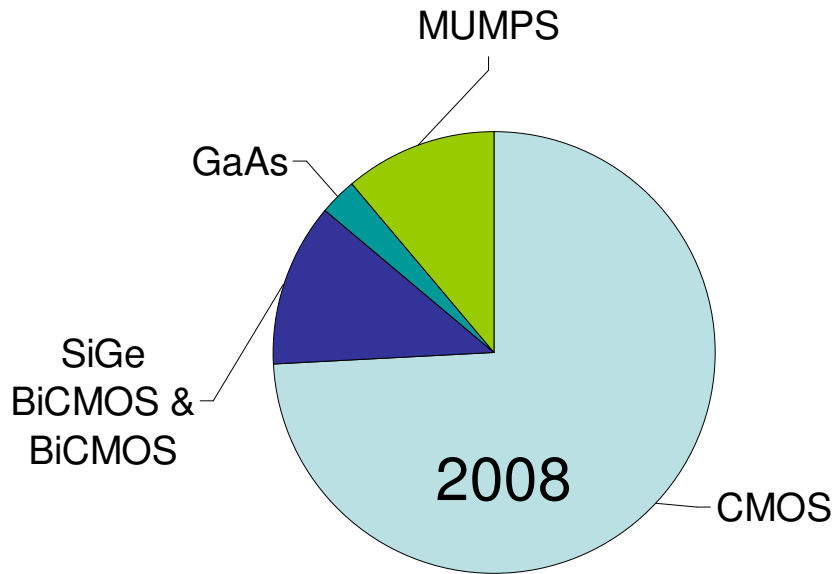
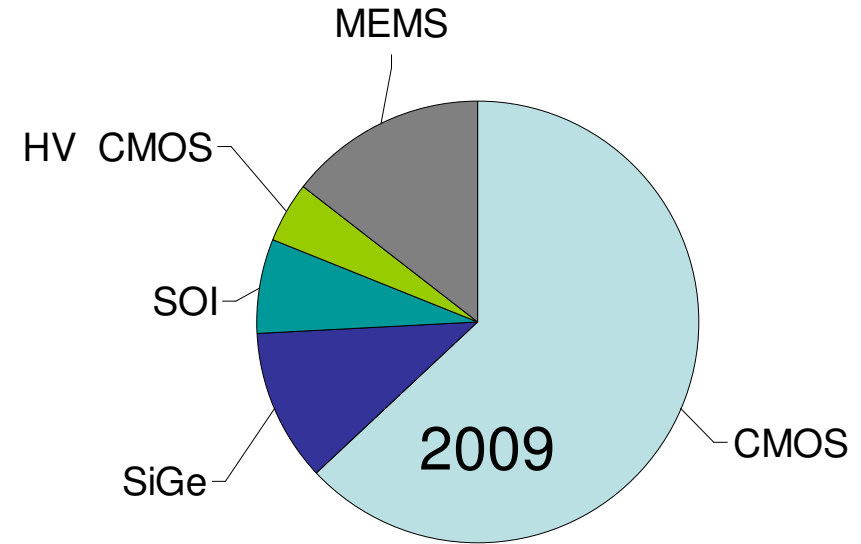
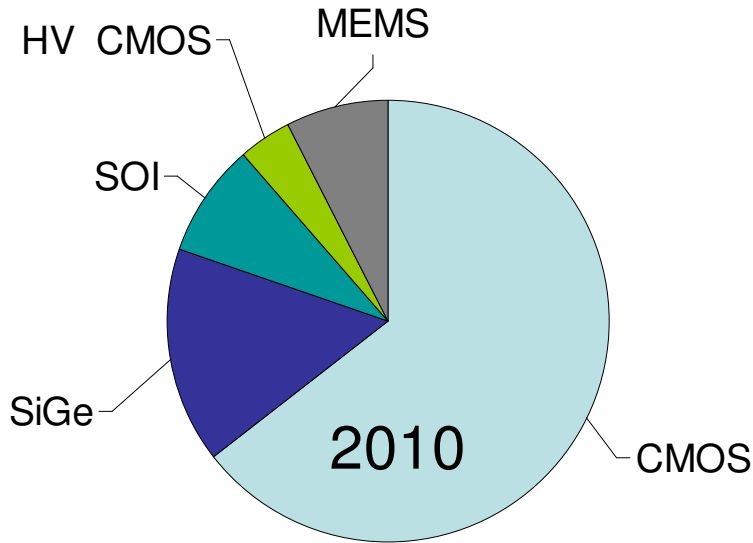
# Circuits per foundry

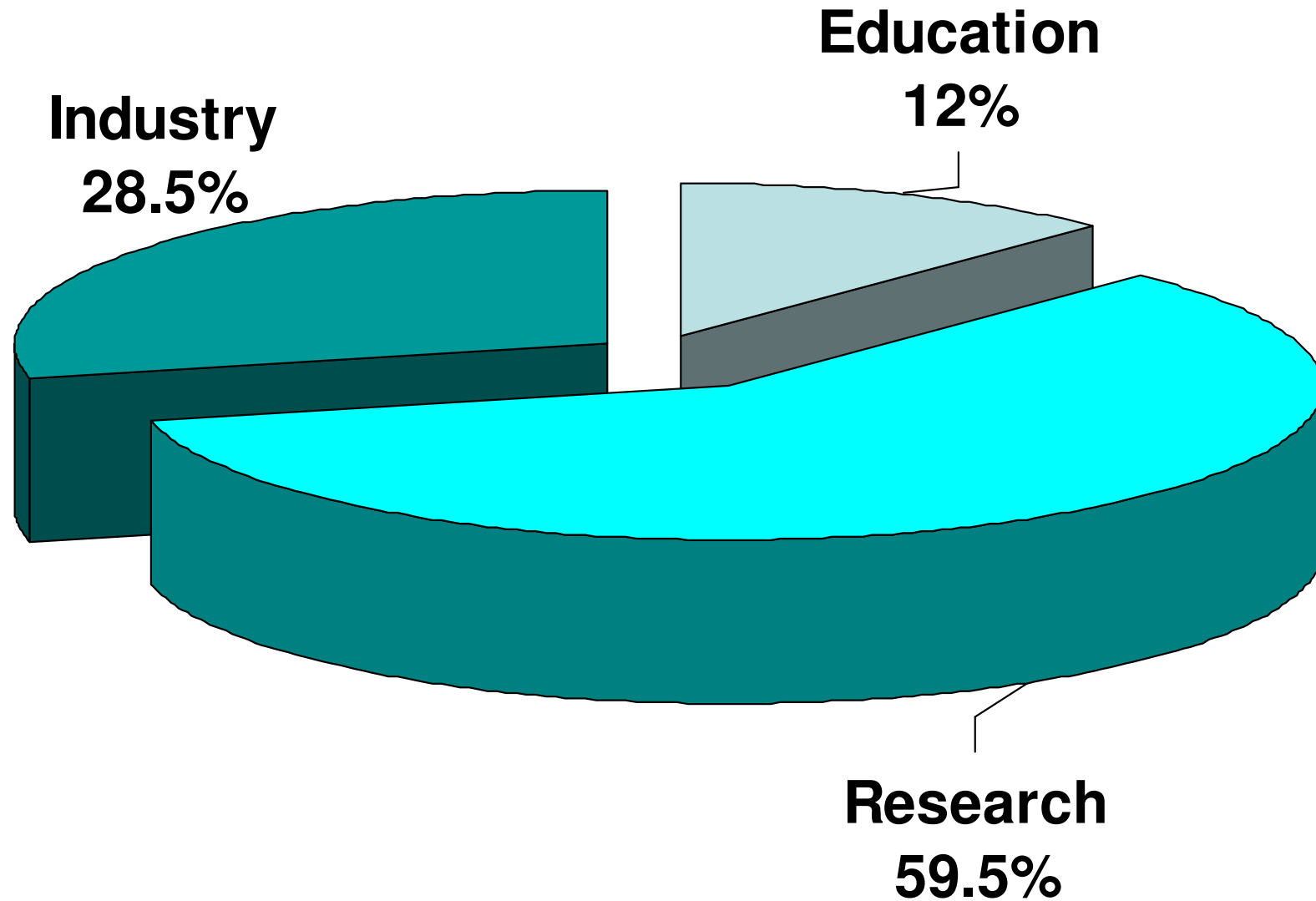




# Circuits per technology in 2010

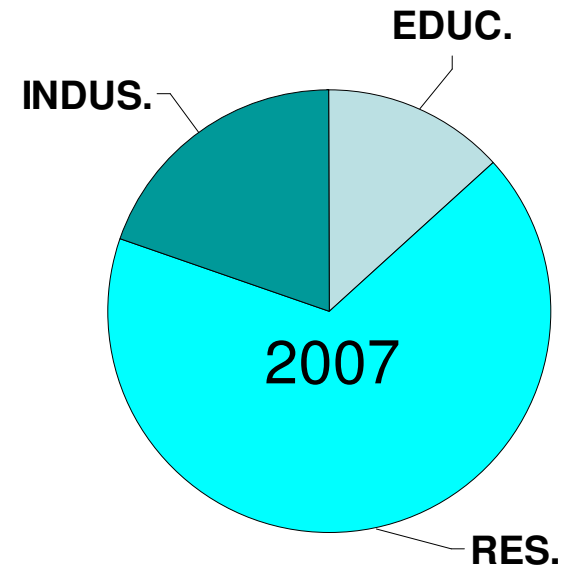
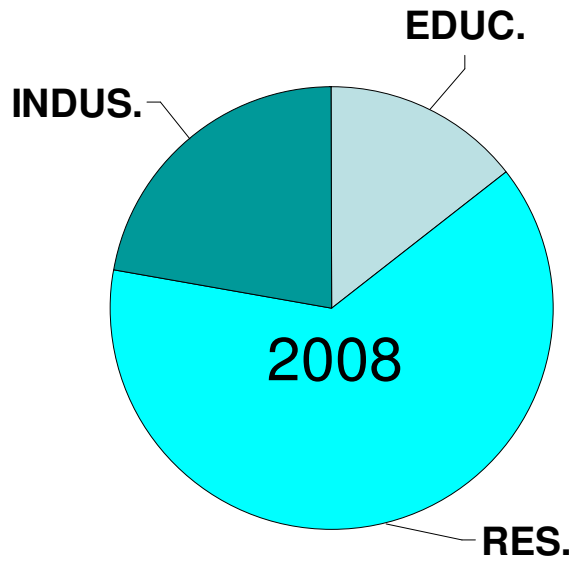
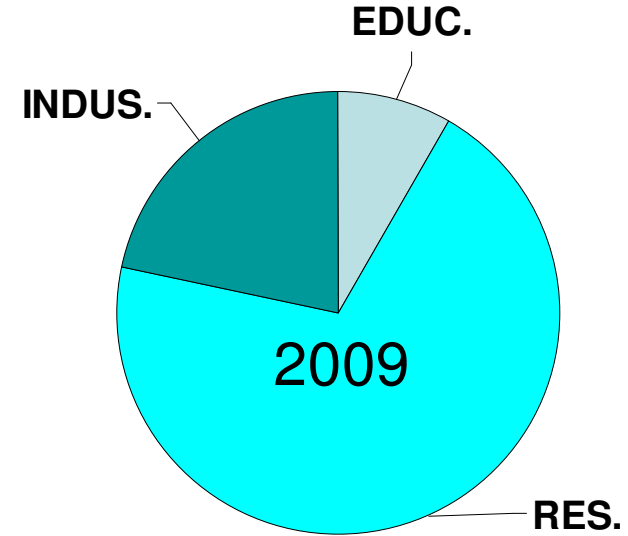
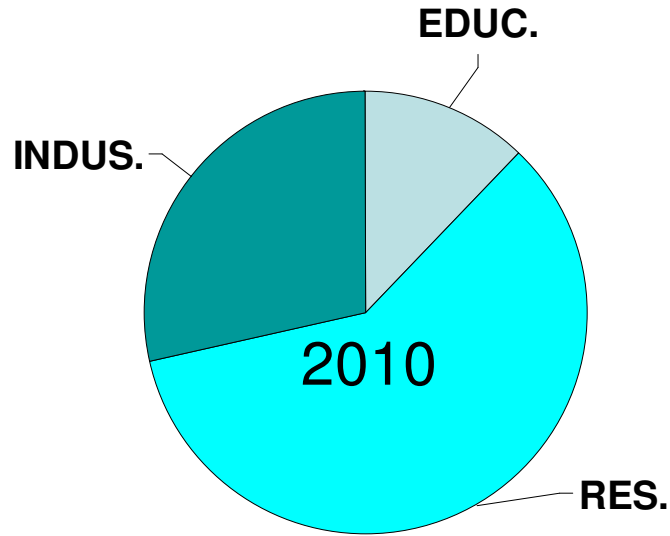








# Circuits E - R - I, evolution

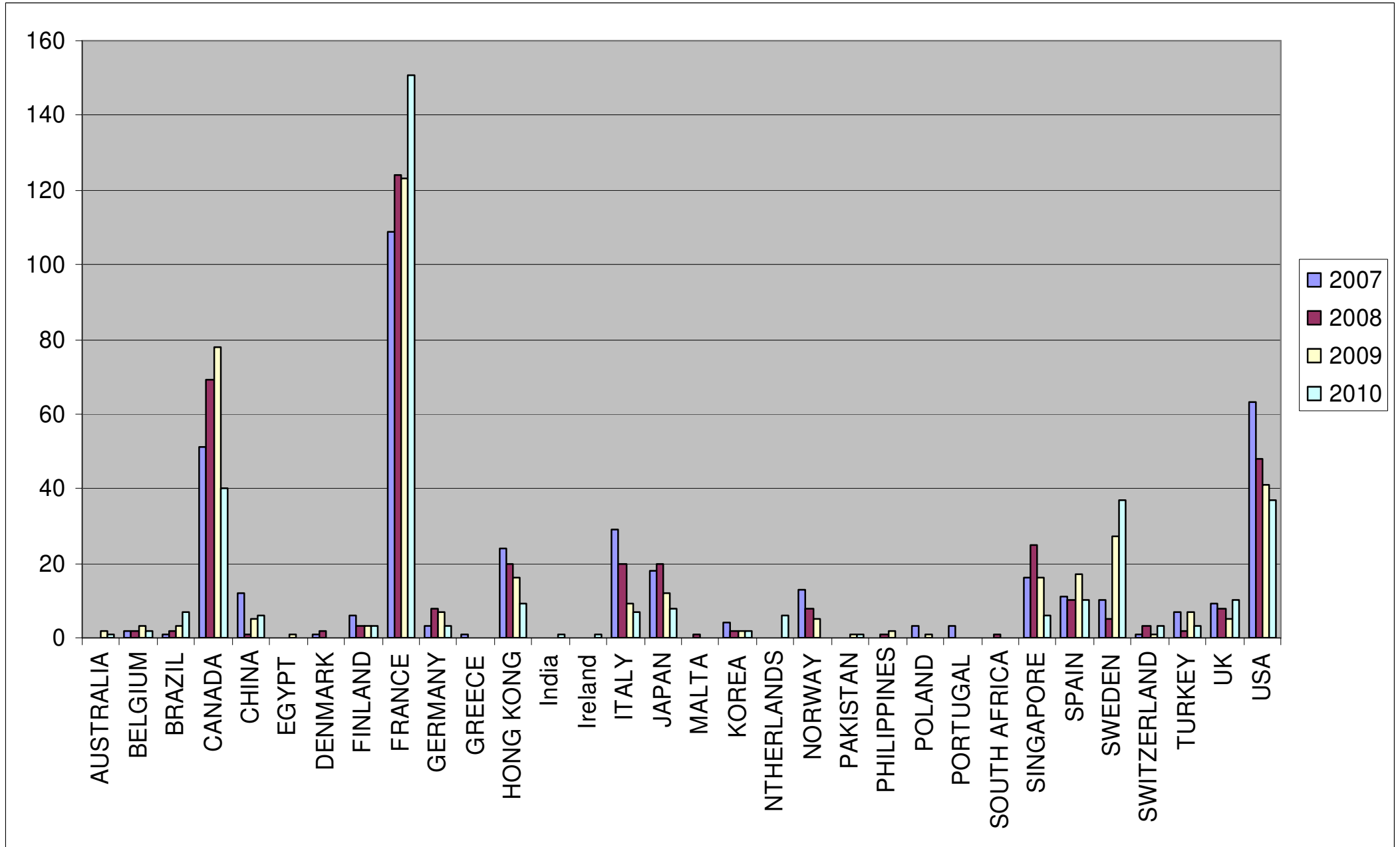




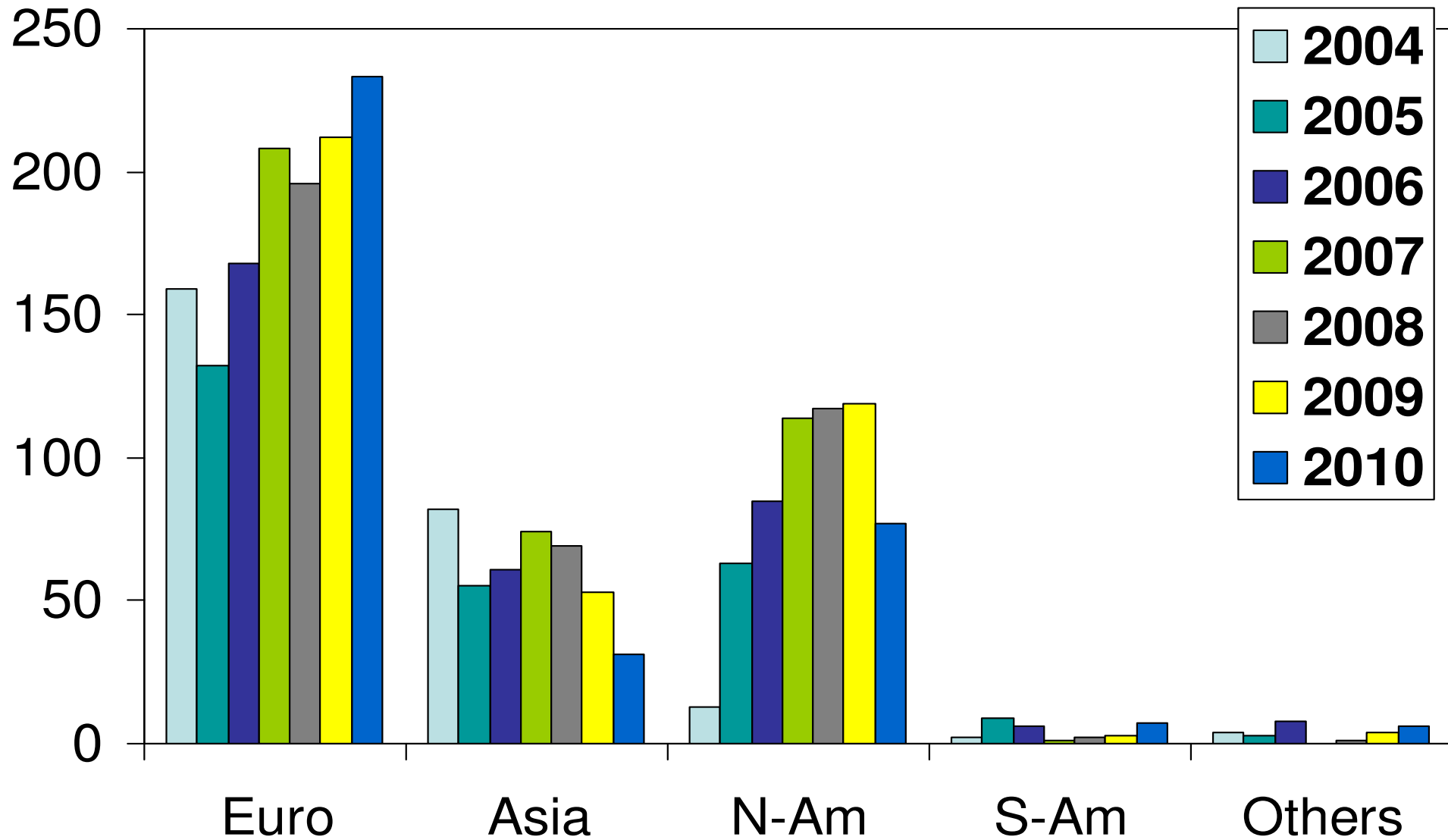
# Circuits per country



CNRS - INPG - UJF

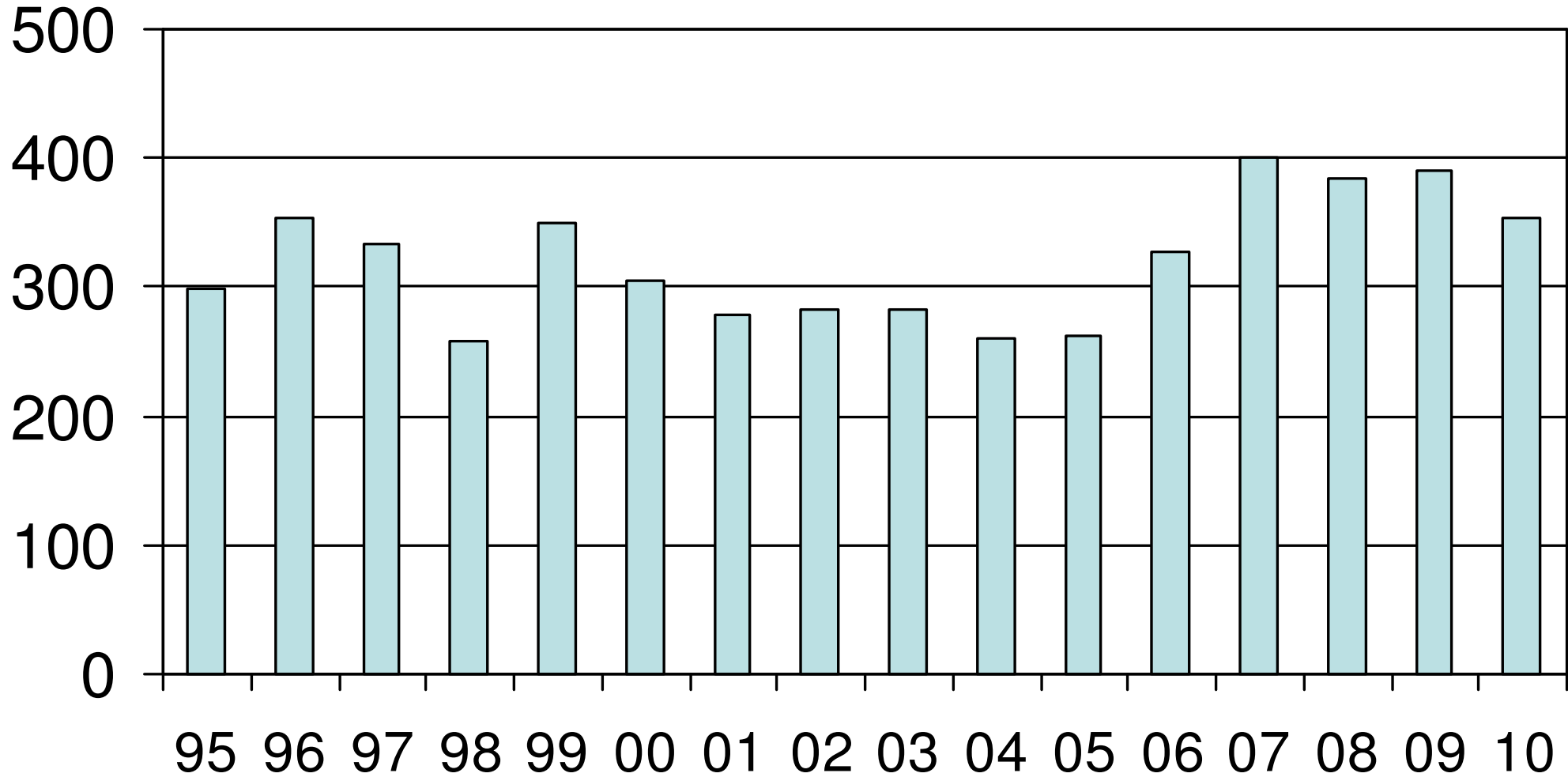


# Circuits per geographical area





# Circuits number



# Non academic Centers in 2010

ACREO AB	NORRKOPING	SWEDEN
Catena Holding BV	Delft	NETHERLANDS
<b>EDA Solutions</b>	<b>Fareham</b>	<b>UK</b>
CEA-SACLAY	GIF SUR YVETTE	FRANCE
CIM-PACA	BIOT	FRANCE
<b>ETRI</b>	<b>gwangju</b>	<b>Korea</b>
Ericsson AB	Stockholm	SWEDEN
Invia	Meyreuil	FRANCE
IPNL / IN2P3	Villeurbanne	FRANCE
IPHC / IN2P3	Strasbourg	FRANCE
INFN BARI	BARI	ITALY
LETI/CEA	Grenoble	FRANCE
LPNHE / IN2P3	Paris 05	FRANCE
LPSC / IN2P3	GRENOBLE	FRANCE
<b>Menta</b>	<b>Montpellier</b>	<b>FRANCE</b>
Mikroelektronik AGTTLS	Istanbul	TURKEY

MIND	Archamps	FRANCE
Neurelec	Vallauris	FRANCE
<b>Obsidian Technology</b>	<b>Dana Point, CA</b>	<b>USA</b>
<b>Peraso Tech. Inc.</b>	<b>Toronto, Ontario</b>	<b>CANADA</b>
Philips Research	Eindhoven	NETHERLANDS
Thales SA	Elancourt cedex	FRANCE
UC LBNL	BERKELEY	UNITED STATES
LAL / IN2P3	ORSAY	FRANCE
VTT Inf. Tech.	ESPOO	FINLAND

**25 Centres**

**(26 Centres in 2009)**



# Low Volume Productions in 2010



CHINESE UNIVERSITY OF HONG KONG	30	InEES Strasbourg	50	CEA-SACLAY	>100
IMS	30	IPHC / In2P3	50	CEA-SACLAY	>100
IMS	30	LAAS-CNRS	50	CEA-SACLAY	>100
LPNHE / IN2P3 Paris VI & VII	30	LAAS-CNRS	50	CEA-SACLAY	>100
NANYANG TECHNOLOGICAL UNIVERSITY	30	LAAS-CNRS	50	CEA-SACLAY	>100
NATIONAL UNIVERSITY OF SINGAPORE	30	LAAS-CNRS	50	CEA-SACLAY	>100
UC LBNL, Berkeley	30	LAAS-CNRS	50	IPHC / In2P3	>100
LETI/CEA Grenoble	35	LETI/CEA Grenoble	50	IPHC / In2P3	>100
NARA Institute of Science and Technology	35	LETI/CEA Grenoble	50	IPHC / In2P3	>100
VTT INFORMATION TECHNOLOGY	35	NARA Institute of Science and Technology	50	IPHC / In2P3	>100
NATIONAL UNIVERSITY OF SINGAPORE	36	Thales sa	50	IPHC / In2P3	>100
California Institute of Technology	40	Thales sa	50	IPHC / In2P3	>100
IM2NP/L2MP POLYTECH Marseille	40	Thales sa	50	IPHC / In2P3	>100
LETI/CEA Grenoble	40	UNIVERSITY OF CALIFORNIA BERKELEY	50	IPHC / In2P3	>100
LETI/CEA Grenoble	40	NARA Institute of Science and Technology	55	LPSC / IN2P3	105
LETI/CEA Grenoble	40	NARA Institute of Science and Technology	55	Peraso Technologies, inc.	200
Mikroelektronik AGTTLS, Istanbul	40	NARA Institute of Science and Technology	55	LETI/CEA Grenoble	360
MOSIS	40	UNIVERSITY OF CALIFORNIA BERKELEY	60	LETI/CEA Grenoble	1500
MOSIS	40	University of Oulu	60	LAL / IN2P3	3000
MOSIS	40	Observatoire de Paris	75	LAL / IN2P3	3000
MOSIS	40	invia	100	LAL / IN2P3	3000
MOSIS	40	LETI/CEA Grenoble	100	LAL / IN2P3	3000
MOSIS	40	UC LBNL, Berkeley	100	LAL / IN2P3	3000
MOSIS	40	University of Michigan	100	LAL / IN2P3	3000
UNIVERSITY OF CALIFORNIA BERKELEY	40			LAL / IN2P3	3000
University of Southampton	40			CMP (consortium CILOMAG)	12 waf
ENSIEG	45			LIRMM (consortium SPIN)	12 waf
LETI/CEA Grenoble	45				

- Low volume productions can be fabricated in a MPW run.
- It can be from some tens to some hundreds or thousands parts.

## **Dedicated production runs :**

LAL Orsay	25 wafers 8" (0.35um SiGe)
CEA Saclay / IPHC	9 wafers 8" (0.35um CMOS)
LETI-CEA Grenoble	6 wafers 8" (0.35um CMOS-RF)
LETI-CEA Grenoble	6 wafers 8" (0.35um CMOS)
ANR-SPIN Consortium	12 wafers 8" (0.35um CMOS)
ANR-SPIN Consortium	12 wafers 8" (130nm CMOS)

- Dedicated production runs can be fabricated using engineering runs of 6, 12, 18, or 24 wafers.
- Up to 300 wafers per project per year can be ordered through CMP.

# Example of prices, prototyping

CMOS	.35 $\mu$	AMS	650 €/mm <sup>2</sup>
CMOS opto	.35 $\mu$	AMS	810 €/mm <sup>2</sup>
CMOS HV	.35 $\mu$	AMS	1000 €/mm <sup>2</sup>
CMOS	130nm	ST	2200 €/mm <sup>2</sup>
CMOS	65 nm	ST	7500 €/mm <sup>2</sup>
CMOS	40 nm	ST	15000 €/mm <sup>2</sup>
SiGe BiCMOS	.35 $\mu$	AMS	890 €/mm <sup>2</sup>
SiGe:C BiCMOS	130nm	ST	3500 €/mm <sup>2</sup>
SOI	130nm	ST	4000 €/mm <sup>2</sup>
SOI	65nm	ST	9500 €/mm <sup>2</sup>
Poly-SOI-Metal	MUMPS	MEMSCAP	3700 €/cm <sup>2</sup>





CNRS - INPG

# Technology Processes in 2011



IC :

**austriamicrosystems**

0.35  $\mu$  CMOS / CMOS-Opto  
0.35  $\mu$  SiGe  
0.35  $\mu$  HV CMOS  
0.35  $\mu$  HV CMOS EEPROM

0.18  $\mu$  CMOS

0.18  $\mu$  HV CMOS

**STMicroelectronics**

40nm CMOS 7LM  
65nm CMOS 7LM  
130nm CMOS 6LM

65nm SOI

130nm SOI

130nm SiGe BiCMOS

3D-IC :

**Tezzaron / GlobalFoundries**

2 Tiers 3D-IC / 130nm CMOS

**CMP/austriamicrosystems**

0.35  $\mu$  CMOS bulk micromachining

MEMS :

**MEMSCAP**

**PolyMUMPS**

**MetalMUMPS**

**SOI-MUMPS**

**SANDIA**

**SUMMIT V**

CAD Tools :

ARM, SoftMEMS

IP exploitation :

ARM cores on STMicroelectronics processes (130nm and 65nm)

Design kits :

more than 35 different kits

Packaging :

Ceramic, plastic, optical, custom ...