

Université Pierre et Marie Curie

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Immediate former president of UPMC**

Socioeconomic impact of universities



As a starting point we have to consider that

Universities, as many other public or private institutions

Enroll and pay academic and non academic people

Purchase goods and services from other companies

Deliver goods and services, among them

- research programs (to the public sphere & to private sector)**
- learning programs (1st IE programs, VET, LLL etc.)**
- various students services**

Give the opportunity for inside campus jobs for students

But also Universities are very useful to the society:

In increasing the Human Resources added value

In giving breakthrough in research

And opportunity for innovation

Give added value to the regions where they are located

participate to the international repute of their nations

And last but not least should be major players for world security, peace and development.

	Harvard (2008)	UPMC (2009)	Grenoble EHE (2002)
Students	20 300*	30 000	49 200
Budget in k�	1 831 882	748 654***	896 390***
Direct Employment	18 750**	9 650	12 535
2008 ISI papers	14 442	5583	1 682
10y ISI papers	95 291	28 435	10 981
10y ISI citations	2 597 786	314 981	130 233
Taiwan ranking	1	50	210
Shanghai ranking	1	42	152-200
THE ranking	1	100	155

***In 2007, in addition, 6 400 people took courses at the extension school**

**** including part time people**

***** including salaries and budget controlled by research organisms**

Higher Education is one of the Boston area's leading industries.

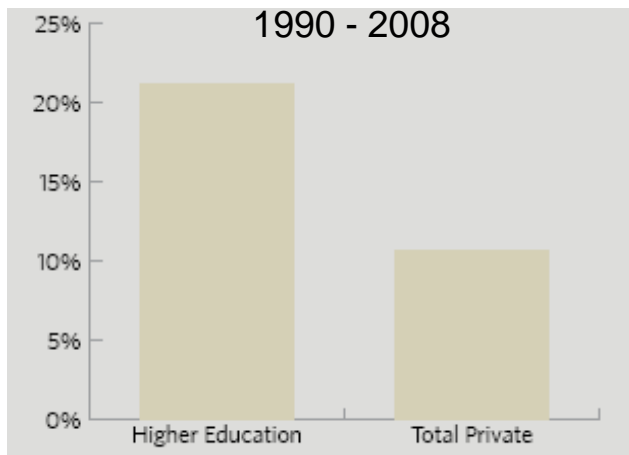
Figures of november 2008

Higher Education employed 92,300 people : 6.0 % of private payroll employment (the number at the US nationwide is less than 1.5 %)

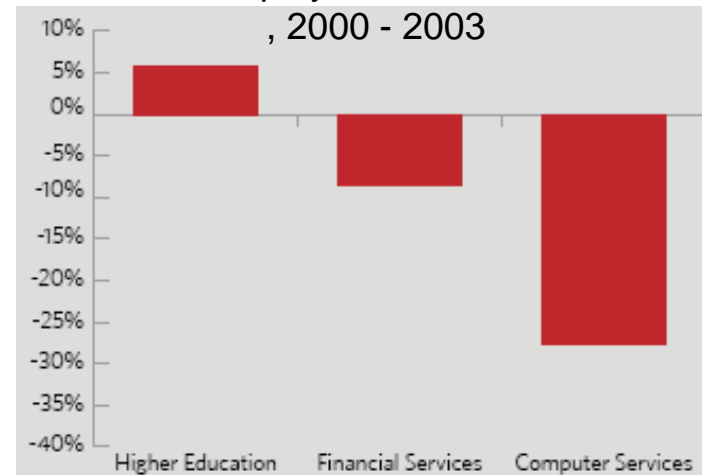
Banking, securities and investment industries combined employed 86,000

Computer hardware, software and services businesses employed 81,000

Change in HE and Total Private Employment in Massachusetts, 1990 - 2008



Change in HE, Financial and Computer Services Employment in Massachusetts, 2000 - 2003



Harvard as an employer

In the fall of 2008, Harvard had 18,750 employees. Of this, 18,350 worked in the Boston metropolitan area. So Harvard is the region's second-largest private employer, behind Massachusetts General Hospital.

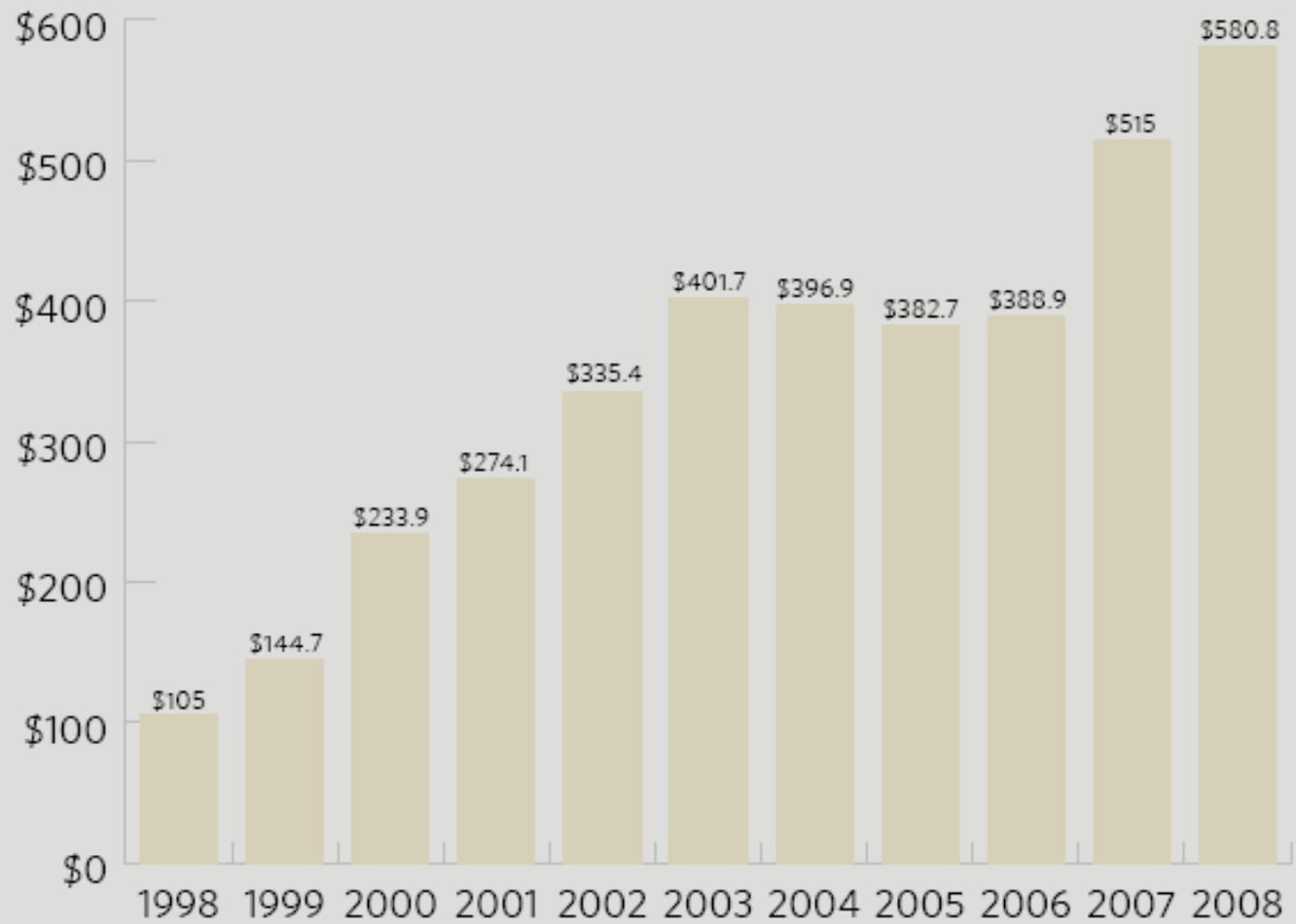
Between 2000 and 2002, employment in the Boston area declined by 3.3 %. But in the same two-year period, employment at Harvard grew by 2 %

During the recovery that followed, the University continued its recent history of steady growth in employment. Between 2004 and 2008, employment at Harvard grew by 4.9 percent outpacing the 2.8 % growth of private employment in the Boston area.

Harvard's total employment impact in the Boston area and Massachusetts, 2008

	<i>Boston area</i>	<i>Massachusetts</i>
Direct University employment	18,350	18,365
Employment with Harvard suppliers and contractors	9,125	10,165
Jobs generated through the multiplier effect	12,885	16,195
Jobs supported by off-campus student spending	3,710	3,850
Jobs at selected companies with "Harvard DNA"	7,500	7,500
TOTAL	51,570	56,075

Construction spending, FY 1998 - FY 2008 (\$ millions)



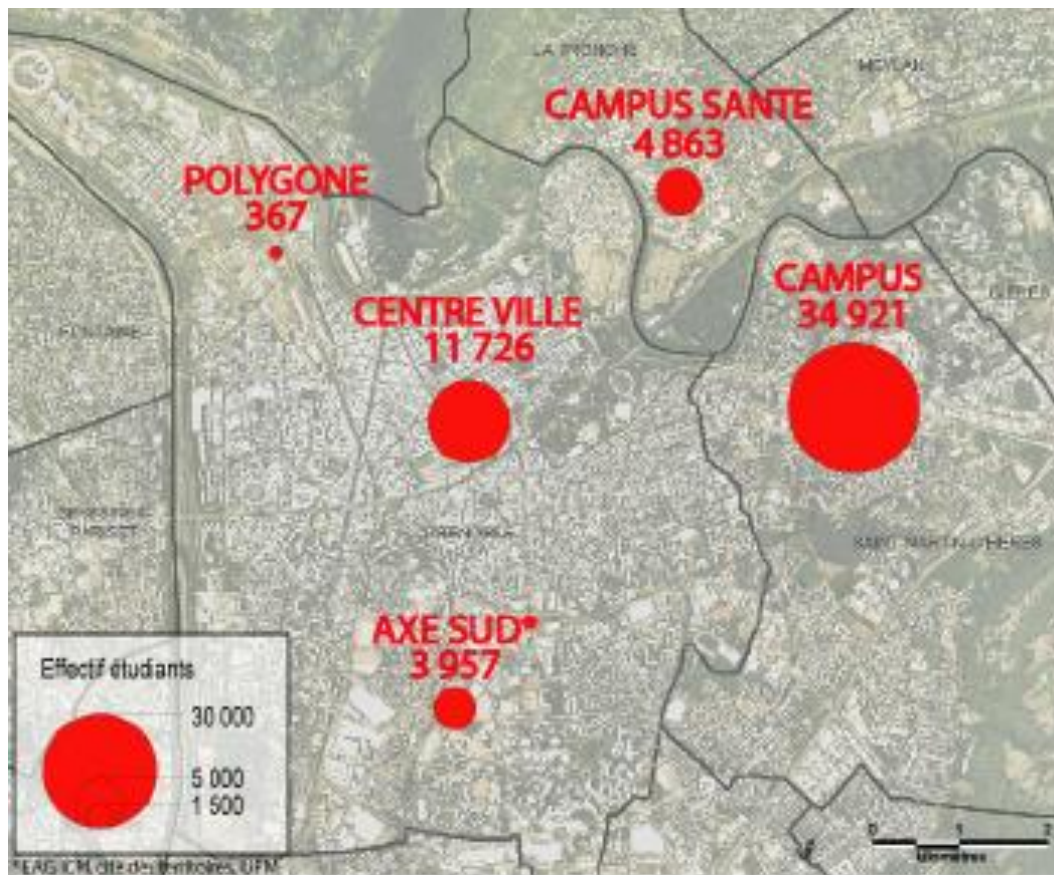
**Are European University also capable
of a strong employment effect ?**

Grenoble area case

Grenoble University System : Students in Hiher Education Establishments

Inhabitants

Paris (ville)	2 147 857	
CU du Grand Lyon	1 186 754	1
CU de Lille Métropole	1 108 318	2
CU Marseille Provence Métropole	991 953	3
CU de Bordeaux	671 875	4
CA du Grand Toulouse	600 305	5
CU de Nantes	568 517	6
CA de Nice - Côte d'Azur	499 479	7
CU de Strasbourg	456 551	8
CA de Toulon Provence Méditerranée	403 743	9
CA de Grenoble Alpes Métropole	398 567	10



Total number of students in Grenoble area	49 173
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Grenoble universities	44 537
Joseph Fourier University (UJF)	16 408
Pierre Mend�s France University (UPMF)	17 369
National Polytechnic Institute of Grenoble (INPG)	4 673
Stendhal University (UST)	6 087

Other institutions devoted to higher education	4 636
Management school of Grenoble (GEM)	2 284
Grenoble school of Arts (ESAG)	143
Teacher Education Institute (IUFM)	1 288
Grenoble school of Architecture (EAG)	921

Economic impact of Higher Education and Research Institutions Spending of employment and output in the Grenoble area in Fiscal Year 2003

	Direct HEI Spending		Indirect and induced impact by vendors, contractors, employees and students			Total Impact
	Net Payroll	Purchasing / Investment	Impact of Employee spending	Impact of Vendors & Contractors	Off Campus student spending*	
Budget (k�)	559 280	336 510	438 730	244 750	348 456	1 927 670
Employment Full Time Eqv	12 535	5 888	7 677	4 283	6 098	36 481

Universities						
Budget (k�)	380 674	219 501	298 621	159 647	270 401	1 328 844
Employment Full Time Eqv	5 487	3 841	5 226	2 793	4 732	22 079

Recapitulation

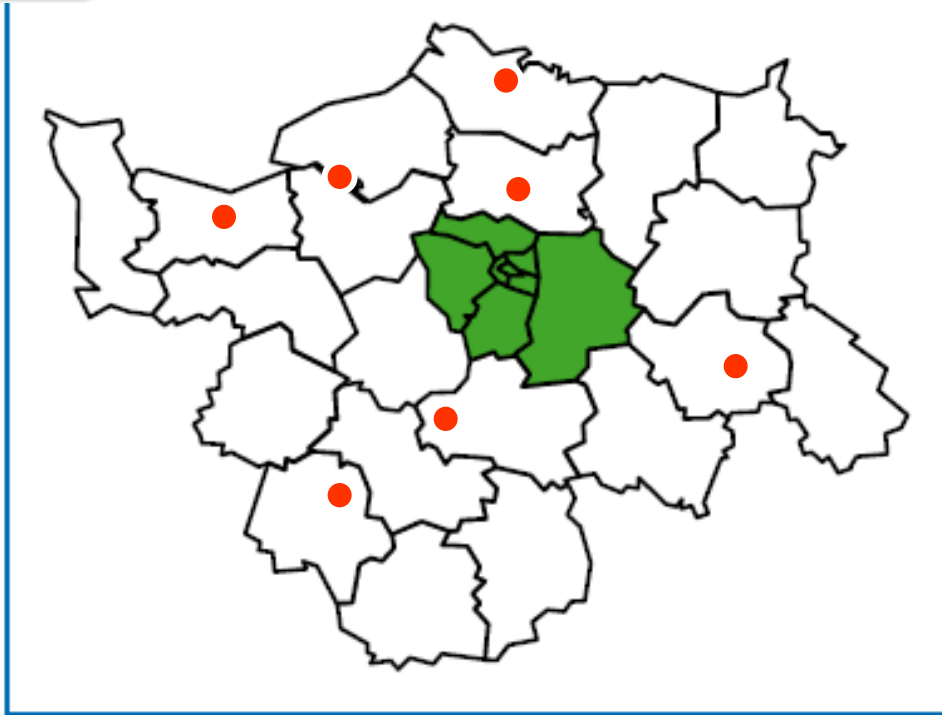
Impact of Higher Education and Research Institutions on Employment in the Grenoble area

Higher Education Institutions	FTE	Students
Four Universities	5 203	43 886
Other public and private institutions	1 128	12 668
Public services for the universities	500	
Research institutions	5 704	
Total	12 535	56 554
 Employment induced	 23 846 (17 592 by universities)	
 Grenoble University hospital	 8 200	
Schneider Electrics	6 700	
Other two biggest companies	5 300	
Companies of Electric Material	9 000	
Chemical Industry	3 500	

**Are European University also capable
of a strong employment effect ?**

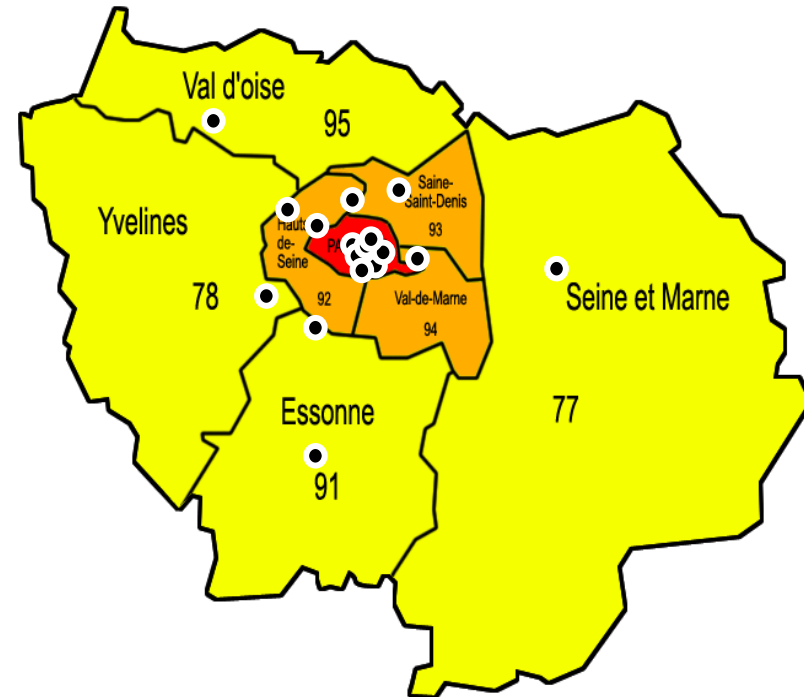
The example of Grenoble area

The UPMC case



8 Universities outside Ile de France

- Amiens
- Rouen
- Compiègne
- Caen
- Troyes
- Orléans
- Tours



Ile de France 17 Universities

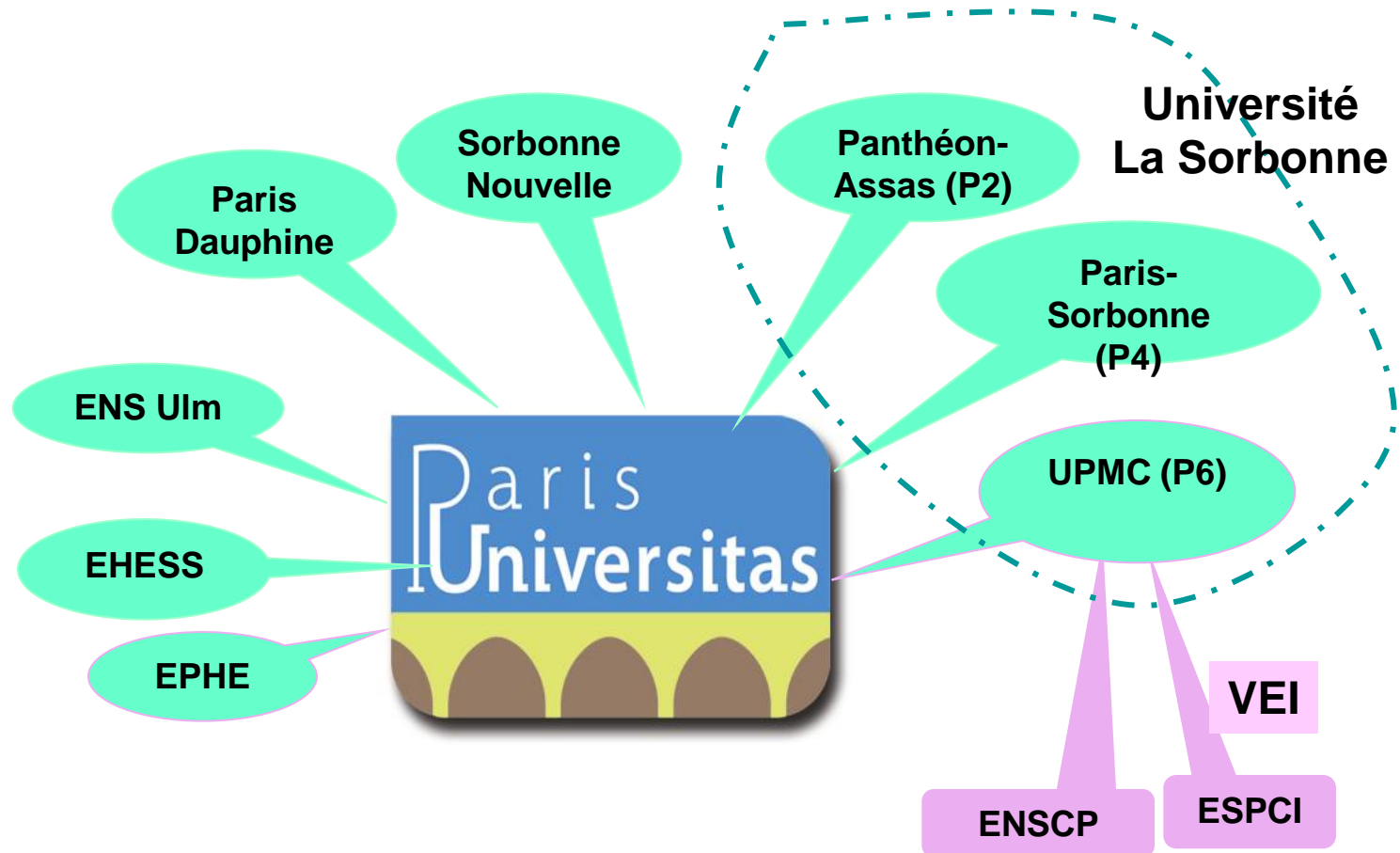
9 hors outside Paris

- Cergy-Pontoise
- Paris Nord
- Paris Saint-Denis
- Paris Ouest (Nanterre)
- Paris Est (Créteil)
- Versailles Saint Quentin
- Paris Sud
- Evry

8 in Paris Intra-muros

- Alliance Paris Universitas**
- Dauphine*
- Panthéon Assas
- Paris Sorbonne
- Sorbonne Nouvelle
- UPMC
- Alliance Paris Centre**
- Panthéon Sorbonne
- René Descartes
- Denis Diderot

UPMC is the main partner of Paris Universitas Alliance



UPMC today

30 000 students

in bachelor studies :	13 000
in masters studies :	4 000
in PhD studies :	3 500
in Medical studies :	4 500
in Engineering studies :	1 000
in other studies :	5 500 (*)
Academic staff :	5 400
Administrative and technical staff :	4 250
Usefull or working surface :	..475 000 m²

*** essentially medical specialization in the hospitals or in LLL**

Economic impact of UPMC Spending of employment and output in the Ile de France region

	Direct UPMC Spending		Indirect and induced impact by vendors, contractors, employees and students			Total Impact
	Net Payroll	Purchasing / Investment	Impact of Employee spending	Impact of Vendors and Contractors	Off Campus Student Spending	
	*	**				
Budget (k�)	454 025	294 629	354 793	150 506	222 657	1 476 610
Employment Full Time Eqv	9 650	5 156	6 209	2 634	3 896	27 545

* 292 725 398   from the state, 21 299 362   from proper resources and 140 000 000   directly paid by CNRS or INSERM

** 150 000   directly paid by CNRS, INSERM, INRA, INRIA or IRD

What happens with graduated students On the employment market ?

Curiously, Harvard is very discrete about that

What we know is that they find good jobs

There is 320 000 alumni of Harvard

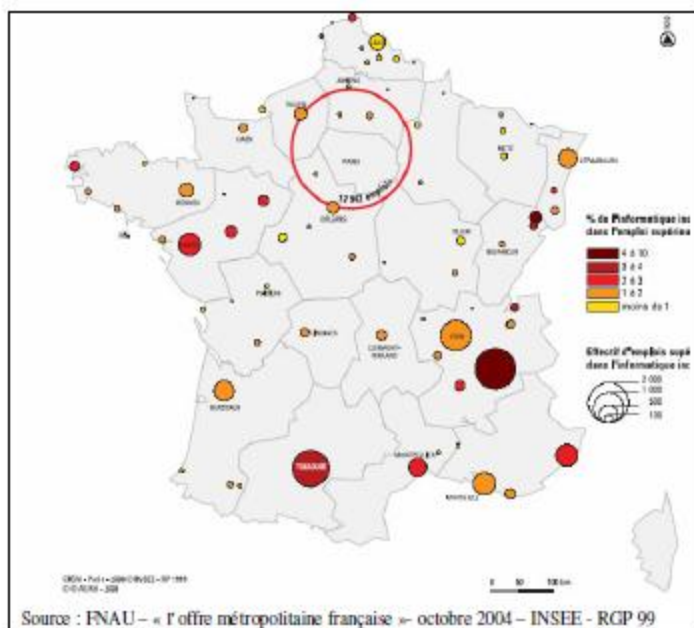
270 000 live in the United States

40 700 within 75 miles from Boston

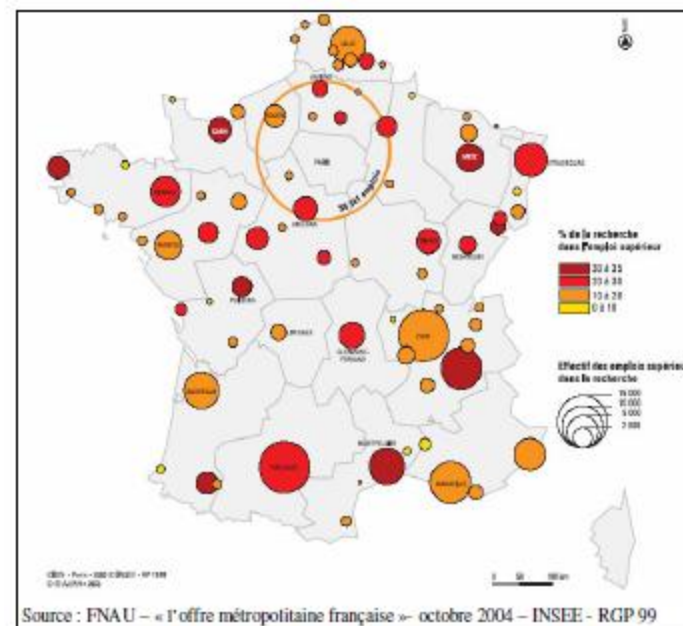
50 000 in 191 other countries

Output of Grenoble higher Education on highly qualified employment

Highly qualified position In Computing Industry



Highly qualified position In public & private research



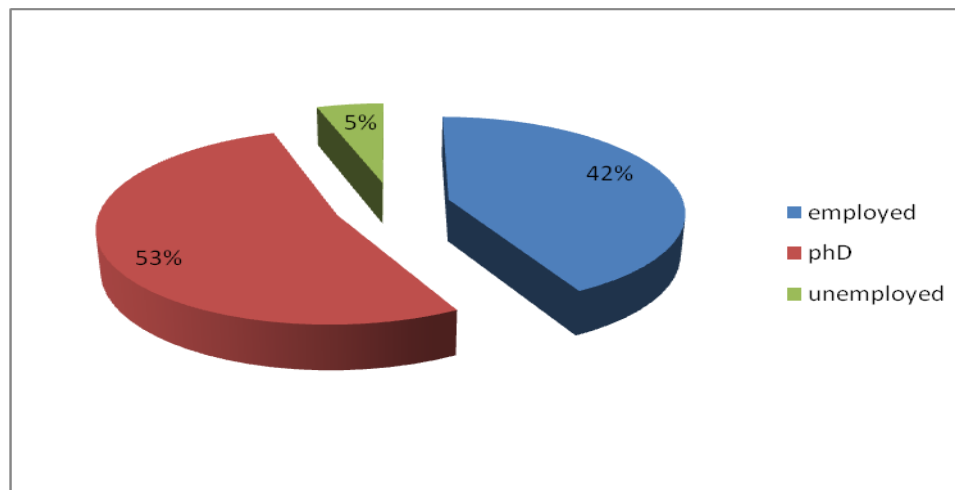
First job after a master graduation at UPMC, in the private sector (inquiry mid 2008)

half of the students graduated for master are enrolled in doctoral studies (*only those who get a grant are enrolled*)

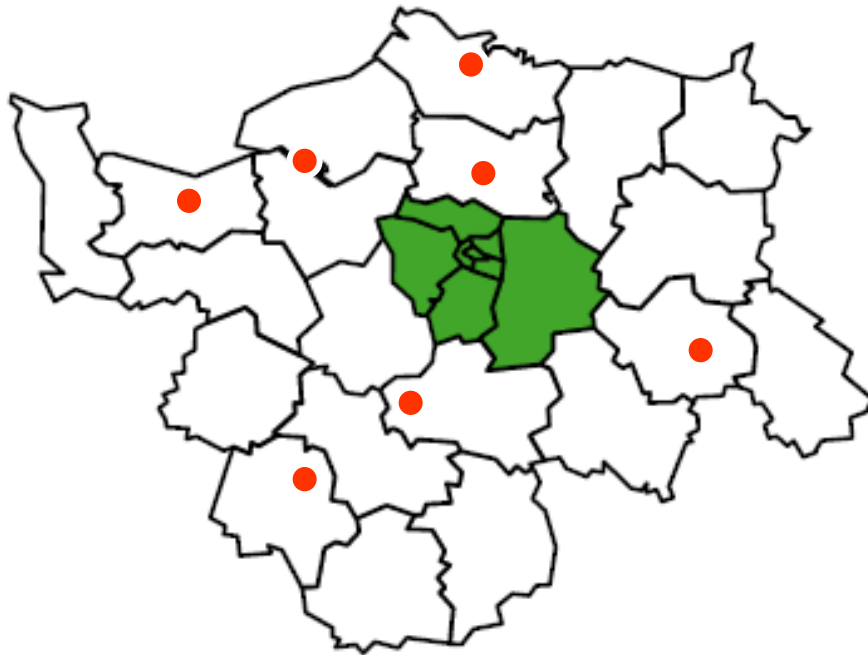
86% of remaining master recipients are hired within 6 months

81.5% in executive positions

31,000 euros average annual wage



Survey of 2 345 students who get a Master degree, in 2007



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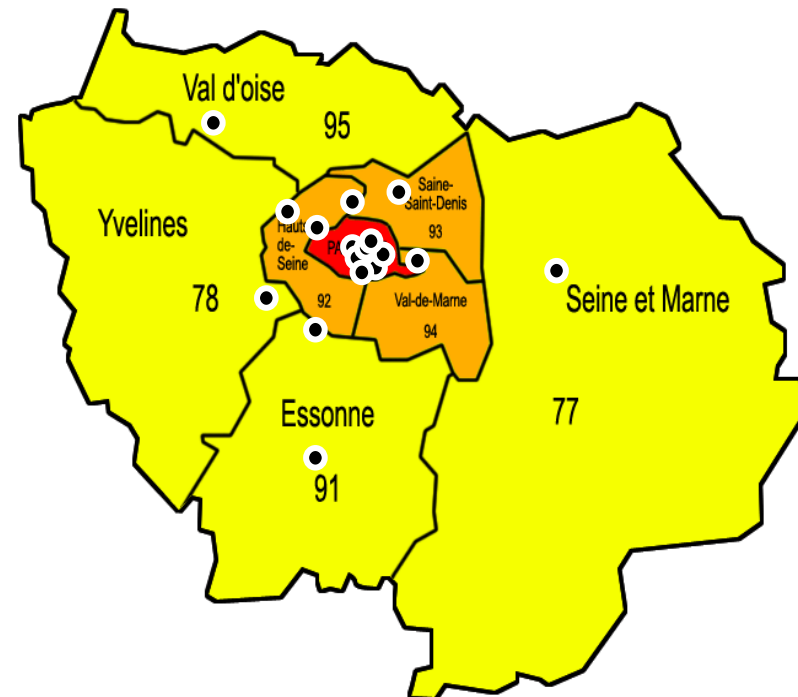
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Doctoral Students of UPMC

	2005-2006	2006-2007	2007-2008
number of students	3350	3387	3377
% of girls	40,10%	42,07%	41,72%
% of foreign students*	29,40%	31,09%	33,88%
% of students coming from another university	51,20%	54,09%	60,55%
number of graduated	671	719	720
rate of graduated in a permanent job	98%	99%	99%

* Among them between 250 and 300 are co-directed with a foreign partner

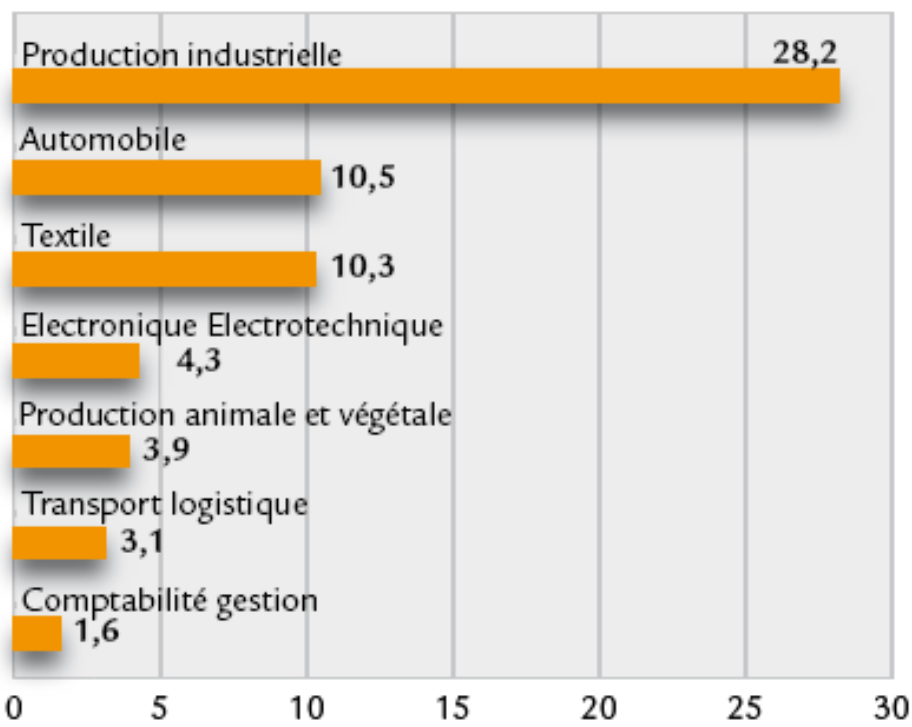
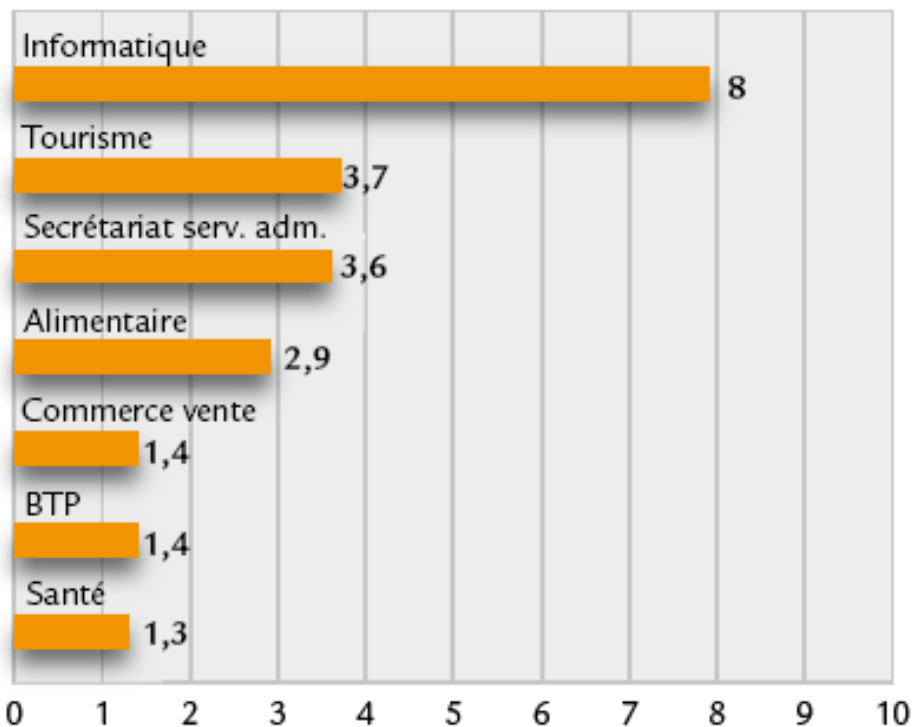
***Link between the universities of Paris
intra-muros With regional universities***



Adequation / inadequation between Employment and graduation in Paris Basin

Graduated students (+ 2 & over) per each
employment position in 2004 on Paris Basin

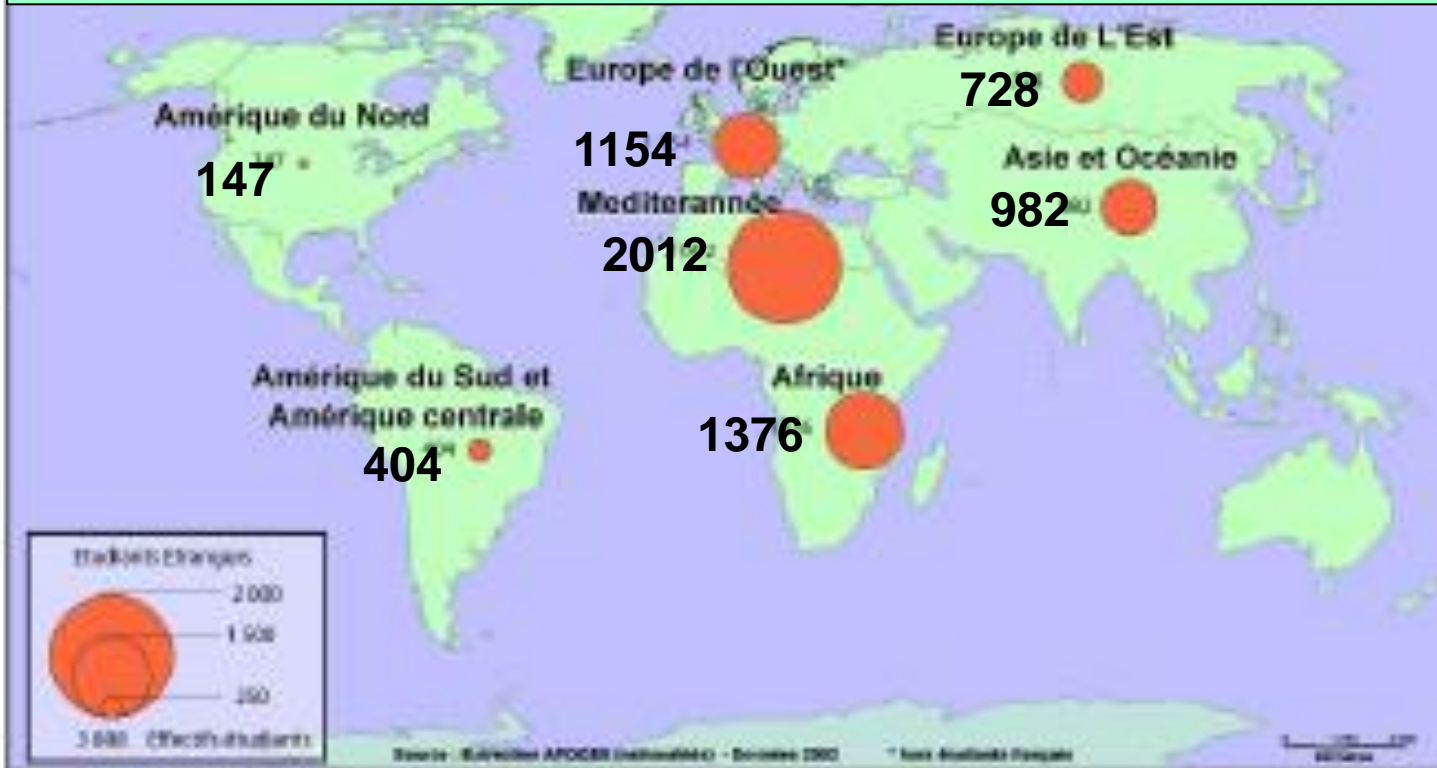
Employment per graduated student
+ 2 and over in 2004 of Paris Basin



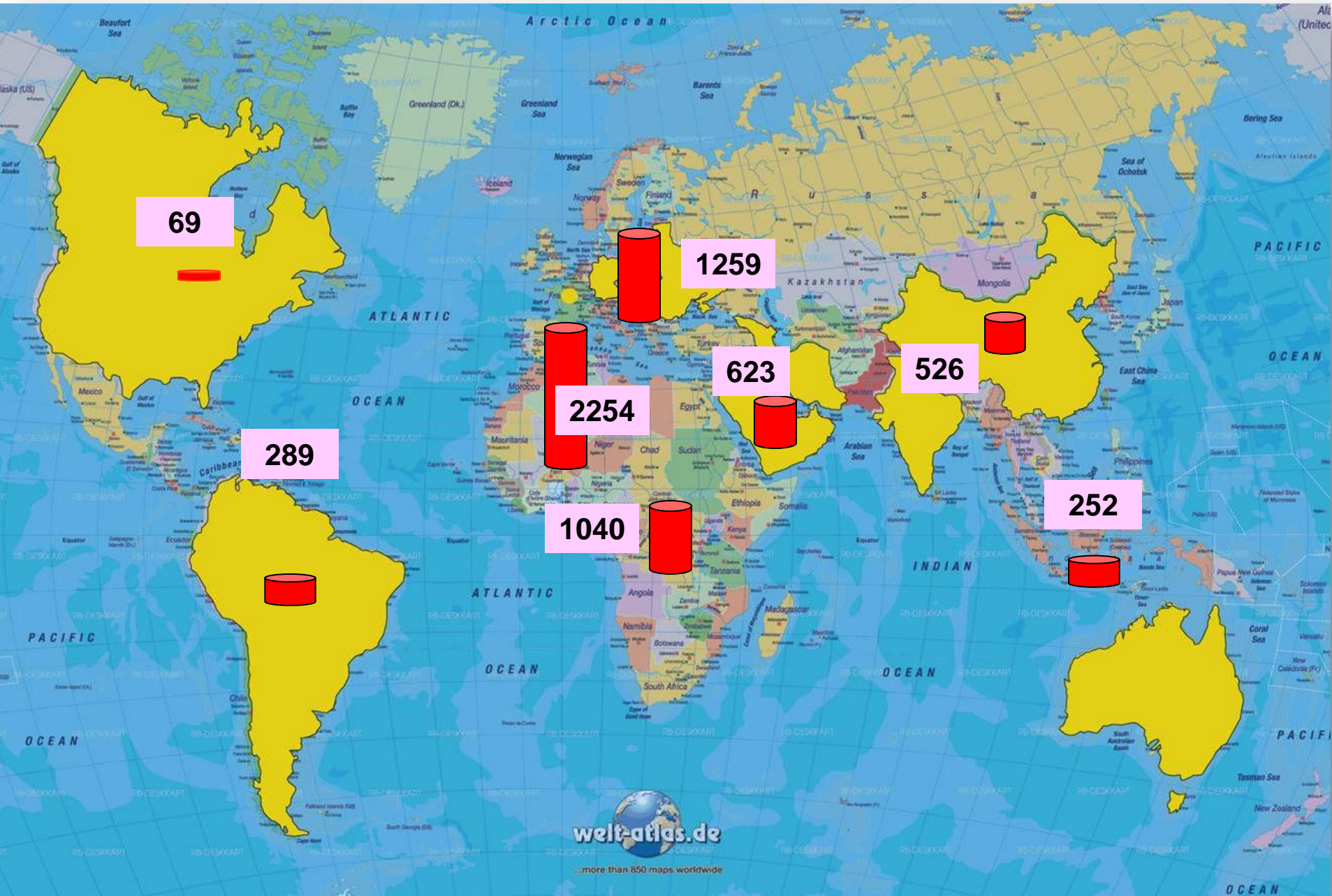
What about the foreign students

6803 (12%) of Grenoble universities' students are foreigners

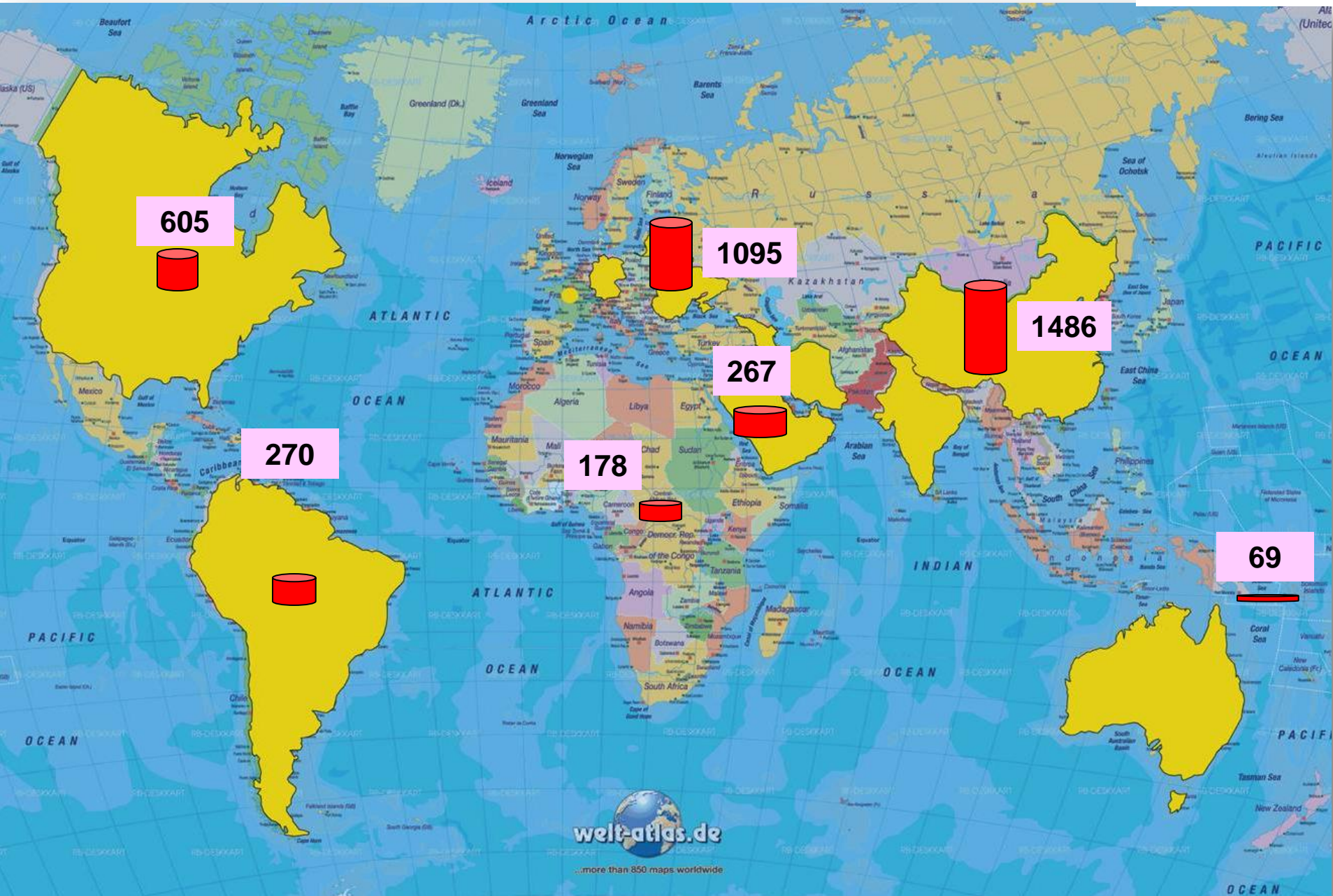
Where the foreign students of Grenoble Universities
Come from ?



6 312 (21,5%) of UPMC's students are foreigners



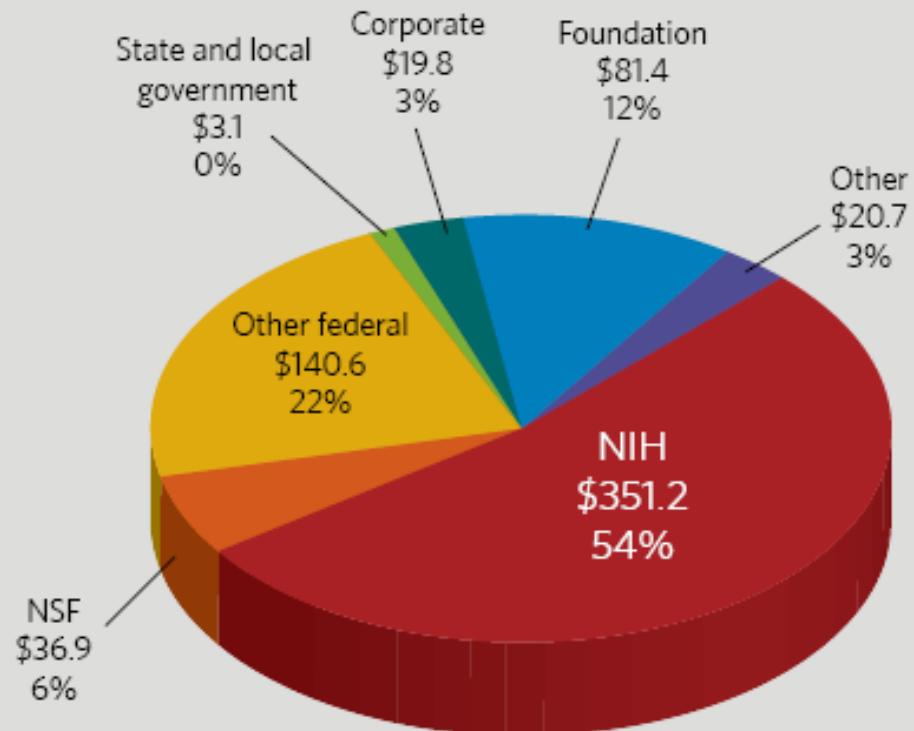
4 004 (20,2%) of Harvard's students are foreigners



**Research, enhanced value of its results
and links with companies**

Research expenditures, in Harvard by source, FY 2008 (\$ millions) total : 660 M \$ (464 M€)

Figure 7: Research spending, FY 2003 - FY 2008 (\$ millions)



UPMC Research expenditure by sources (%€)

Total annual amount 542 M€

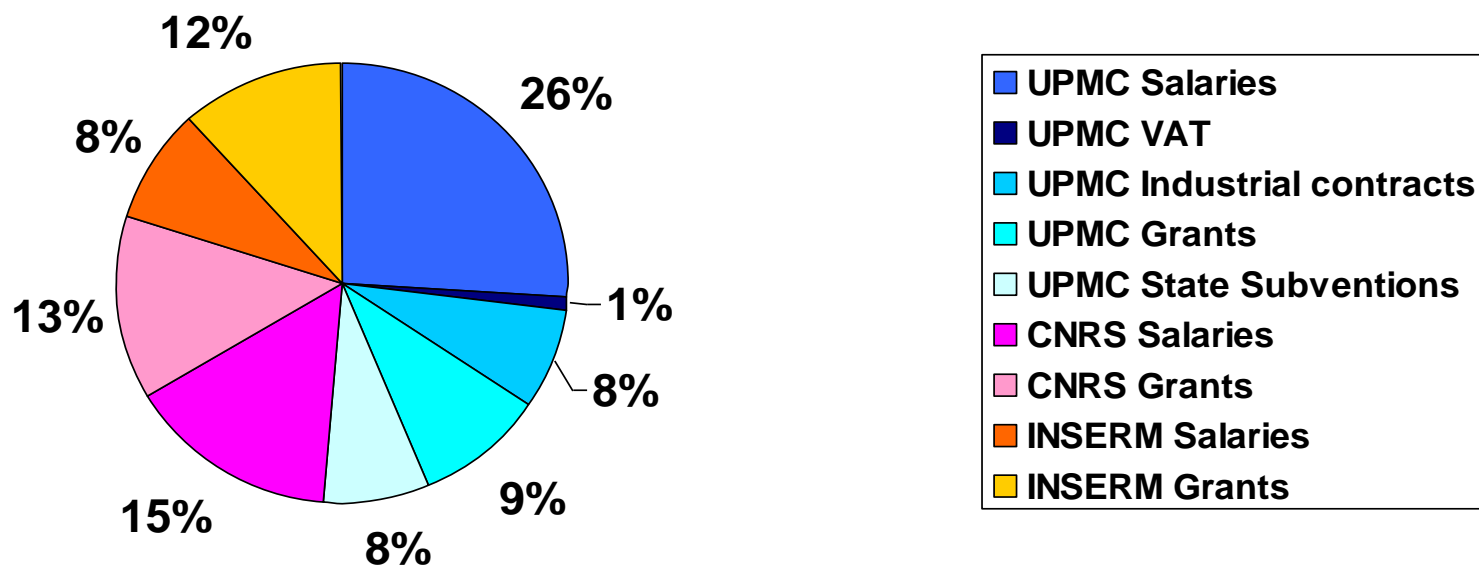


Table 4: Science & engineering research funding, Harvard affiliates, FY 2005

Affiliate	Research funding (\$ thousands)	U.S. Rank
MA General Hospital	\$ 312,358	1
Brigham and Women's Hospital	\$ 250,949	3
Beth Israel Deaconess Medical Center	\$ 125,781	8
Dana-Farber Cancer Institute	\$ 112,519	10
Children's Hospital (Boston, MA)	\$ 101,561	11
McLean Hospital	\$ 36,490	43
Joslin Diabetes Foundation Inc.	\$ 25,195	58
Massachusetts Eye and Ear Infirmary	\$ 16,593	86
Schepens Eye Research Institute	\$ 14,599	92
Forsyth Institute	\$ 10,892	-
Harvard Pilgrim Health Care Inc.	\$ 9,179	-
Cambridge Health Alliance	\$ 2,023	-
Spaulding Rehabilitation Hospital	\$ 1,563	-
Judge Baker Children's Center	\$ 1,259	-
GRAND TOTAL	\$ 1,020,961	

**What about added value of research results
and start up companies ?**

In 2007-2008 24 companies with roots at Harvard have secured 280 M\$ (200 M ) and collectively employed 500 people

Notable start-up companies associated with Harvard				
Company	Location	Founded	Type	Employees
Surface Logix	Brighton	2000	Pharma	45
Pulmatrix	Lexington	2003	Biotech	35
RainDance Technologies	Lexington	2004	Nanotech	55
Codon Devices	Cambridge	2005	Biotech	22
Aileron Therapeutics	Cambridge	2005	Pharma	21
SiOnyx	Beverly	2008	IT	20
Crimson Hexagon	Cambridge	2008	Internet	12

UPMC: Innovation and enhancing development play an essential economic role

- UPMC pursues a policy of daily innovation through its laboratories
- in close collaboration with businesses (start-ups, small and medium-sized businesses, corporate groups) or large public and private research organizations.

Technological transfert

400 on-going collaborative ventures and services for companies

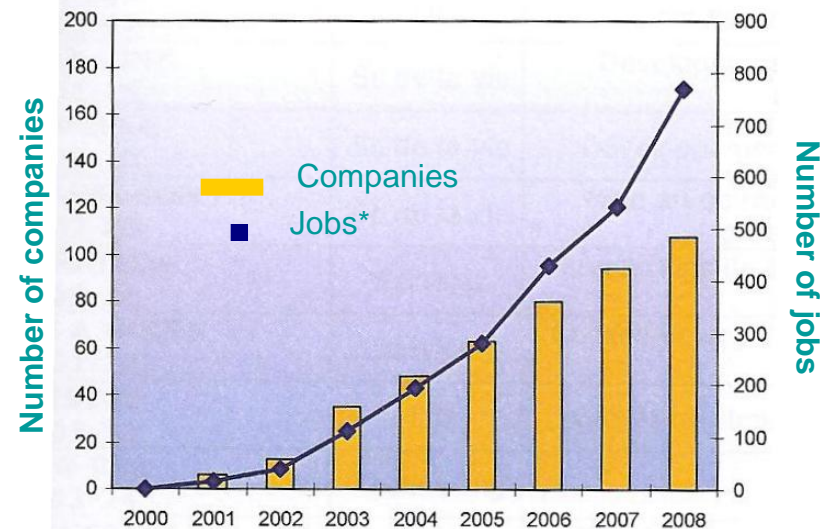
- Over **20** patents applications filed every year
- A portfolio of **200** patents categories
- 1 million euros in yearly royalties
- Approximately **20** start-ups
- **70** European projects and contracts

UPMC Spin Off incubator: Agoranov

In partnership with Paris-Dauphine and Ecole Normale Supérieure

- **130** projects kick-started since the end of 2000
- **105** created companies
- nearly **800** jobs generated
- more than **70** million € of private fund raised or capital-raised by start-up companies

companies and jobs created



What have changed since 20 years ?

The formation of the global knowledge economy since the spread of the Internet in the early 1990s is a key turning point in human history, comparable with the industrial revolution, and perhaps the Neolithic (agricultural) revolution. The world is becoming a single communicative zone and common storehouse of knowledge, while remaining diverse in political, linguistic and cultural terms.

Whereas political economy is shaped by national policies and interests and world development is highly uneven ; Scientific discoveries and ideas about human life are now universal in reach, and cultures are become more transparent to each other.

The neo-liberal analysis underestimates the dynamism of the information revolution and fails to grasp that most information and knowledge takes the form not of tradeable commodities but freely accessed and transferred data from open sources.

Once knowledge is disseminated in open source fashion, the ‘first mover’ advantage disappears and it can be freely reproduced and its natural price is zero.

This is why open global knowledge flows have grown even more rapidly than trade.

Copyright will be no longer the answer to a ‘first mover’ vanishing advantage. Copyright is not just difficult to police, it is violated at every turn.

Scientific publications of most active UE27 r egions in 2001 & in 2006 (informations from Thomson Reuters)

Rang dans l'UE 27 en 2006	R�egions (NUTS 2)	Rang dans l'UE 27 en 2001	Part dans l'UE 27 en 2001 (%)	Part dans l'UE 27 en 2006 (%)	�volution 2006-2001 (%)
1	Ile-de-France (FRA)	1	5,13	4,51	- 12
2	Londres intra-muros (<i>Inner London</i>) (UK)	2	3,77	3,26	- 13
3	R�egion de Madrid (ESP)	3	1,95	2,12	+ 9
4	Danemark (DNK)	5	1,89	1,88	0
5	Rh�one-Alpes (FRA)	4	1,92	1,87	- 2
6	Lombardie (ITA)	10	1,68	1,75	+ 4
7	Catalogne (ESP)	12	1,47	1,74	+ 18
8	R�egion de Berlin (DEU)	8	1,77	1,63	- 8
9	R�egion de Cambridge (UK)	7	1,77	1,62	- 8
10	R�egion de Munich (DEU)	6	1,79	1,59	- 6
11	R�egion de Rome (ITA)	13	1,41	1,48	+ 5
12	R�egion de Cologne (DEU)	11	1,56	1,48	- 5
13	R�egion d'Oxford (UK)	9	1,68	1,43	- 15
14	R�egion d'Helsinki (FIN)	17	1,22	1,26	+ 3
15	R�egion de Karlsruhe (DEU)	15	1,27	1,2	- 5

The idea that stronger Intellectual Property Right regimes for universities will strengthen commercialisation of university knowledge and research results has been in focus in recent years...

But commercialisation requires secrecy in the interests of appropriating the benefits of knowledge, whereas universities may play a stronger role in the economy by diffusing and divulging results. IPRs raise the cost of knowledge to users, while an important policy objective might be to lower the costs of knowledge use to industry.

In addition, commercial is only relevant for a select number of research fields i.e. biomedical research and electronics. Even if in that case, creating private knowledge goods remains an important secondary objective of universities. If too many breakthrough discoveries become tied up by IPRs rather than placed in open science; or creative work becomes over-managed, or destabilized; the spread of useful knowledge is retarded.

That's why the OECD has swung its primary focus of policy from commercial intellectual property to open source dissemination. *Tertiary Education for the Knowledge Society* (2008) notes that tertiary education is fundamental to research and innovation systems via human resource development of R&D capabilities, and knowledge diffusion.

Open science, such as collaboration, informal contacts between academics and businesses, attending academic conferences and using scientific literature, can also be used to transfer knowledge from the public sector to the private sector.

Clearly, for that we need more close contact between University and the industrial and economic world

As before, the main Institutions dedicated to pursuit
and dissemination of understanding

That is their primary function

And second derivatives :

Inculcation of practical skills to students

Contribution to innovation

Public policy

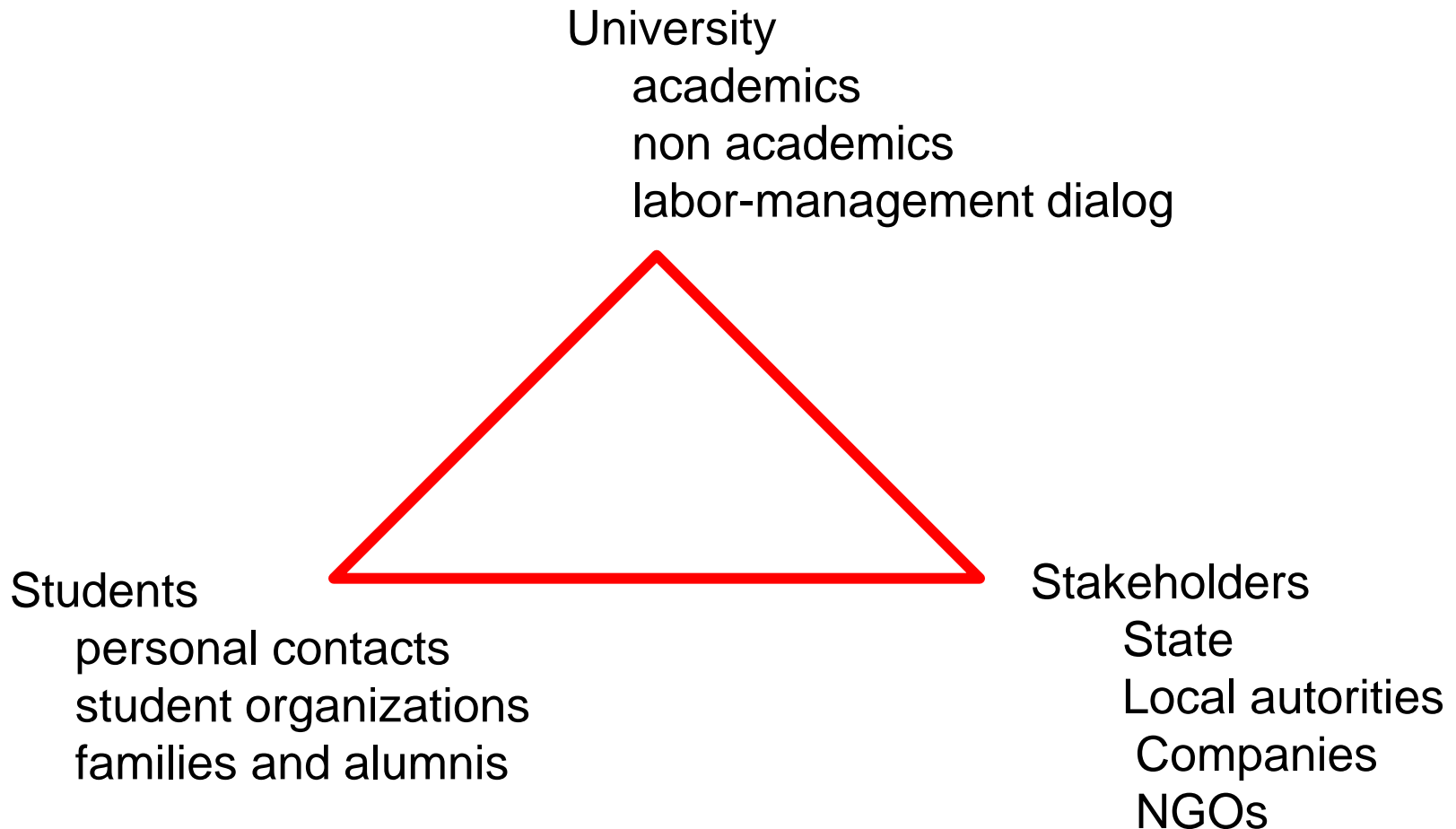
Cultural activity

International harmony

**Without the primary function,
the derivatives will be pale shadow
Of what they could be**

*Goefrey Boulton, former Vice-Principal
of the university of Edinburgh*

**But the relationship between the partners of the universities
will be more complex : the magic triangle**



Yes the cooperation between universities and public and private enterprises must increase and that need more close contacts

But cannot forgot the Goeffrey Boulton statement, that will be one of the main challenge of the universities of the XXIth century



Just like those of Philippe Petit thirty years ago

