



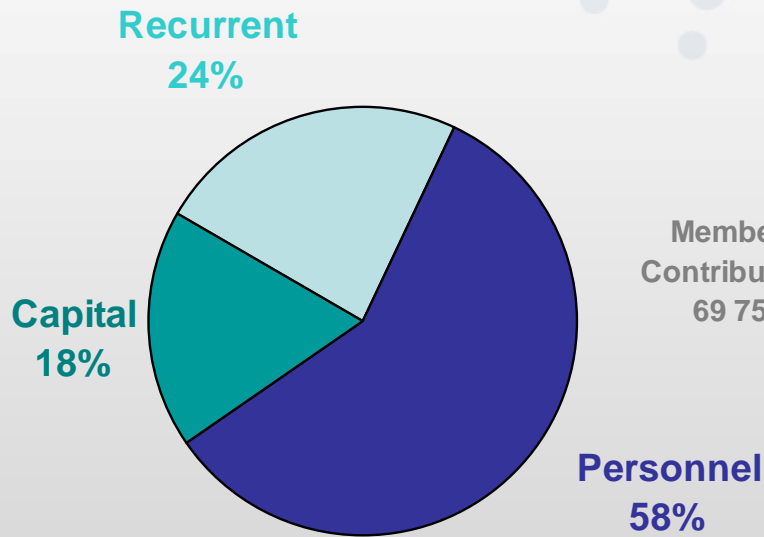
# The Scientific and economic impact of the ESRF in regional developments

H. Krech

« 3 Way Meeting » at APS, Argonne  
17-19 March 2008

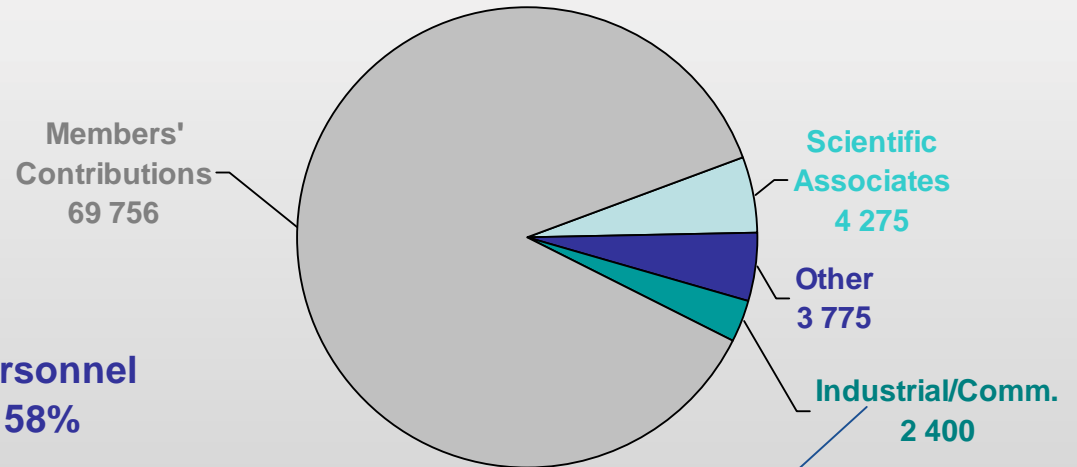
# Budget 2007 (K€, 1€ = 1.5 USD)

## Expenditure



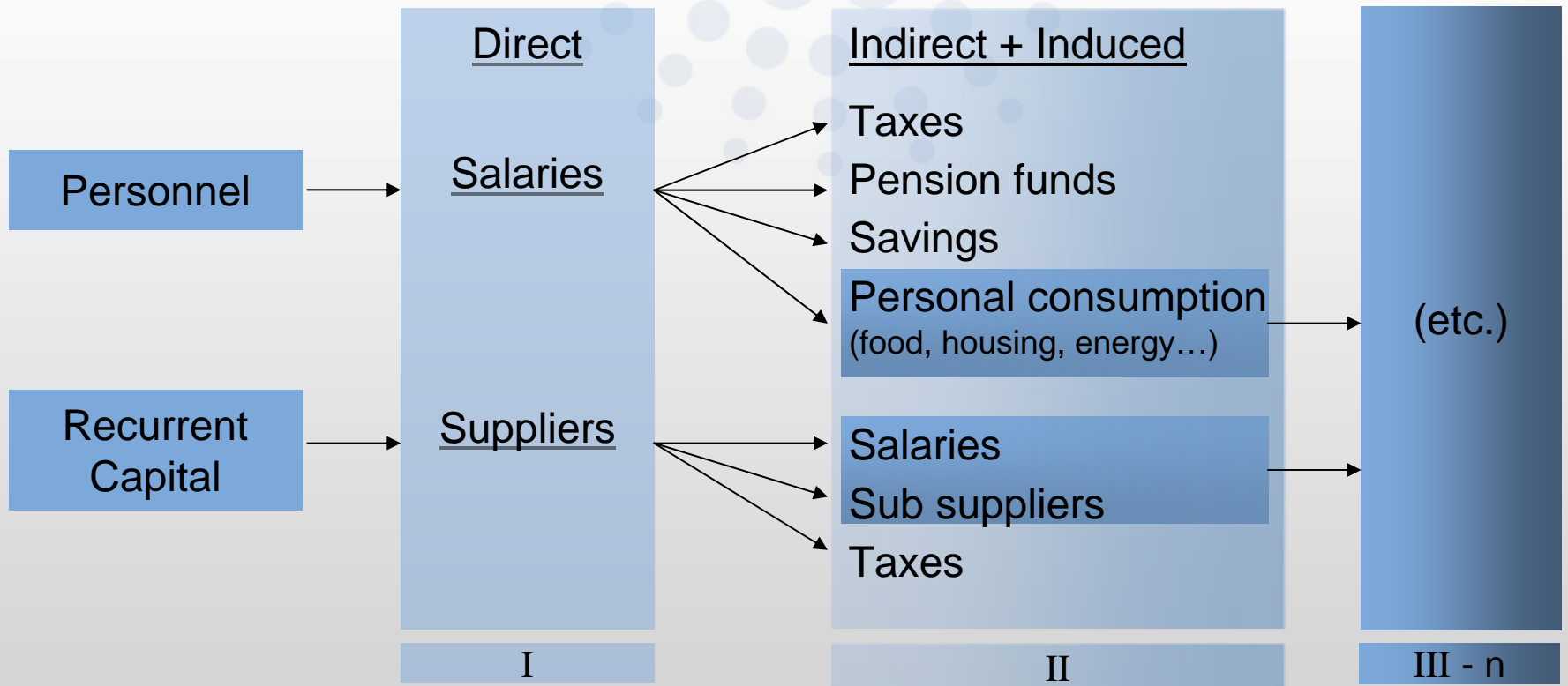
Personnel	46 590
Recurrent	19 055
Capital	<u>14 561</u>
	80 206

## Income



Regional:	
5 out (of 30) licence agreements	20 K€
Sales of beamtime to regional partners	90 K€

# Where does the money go?

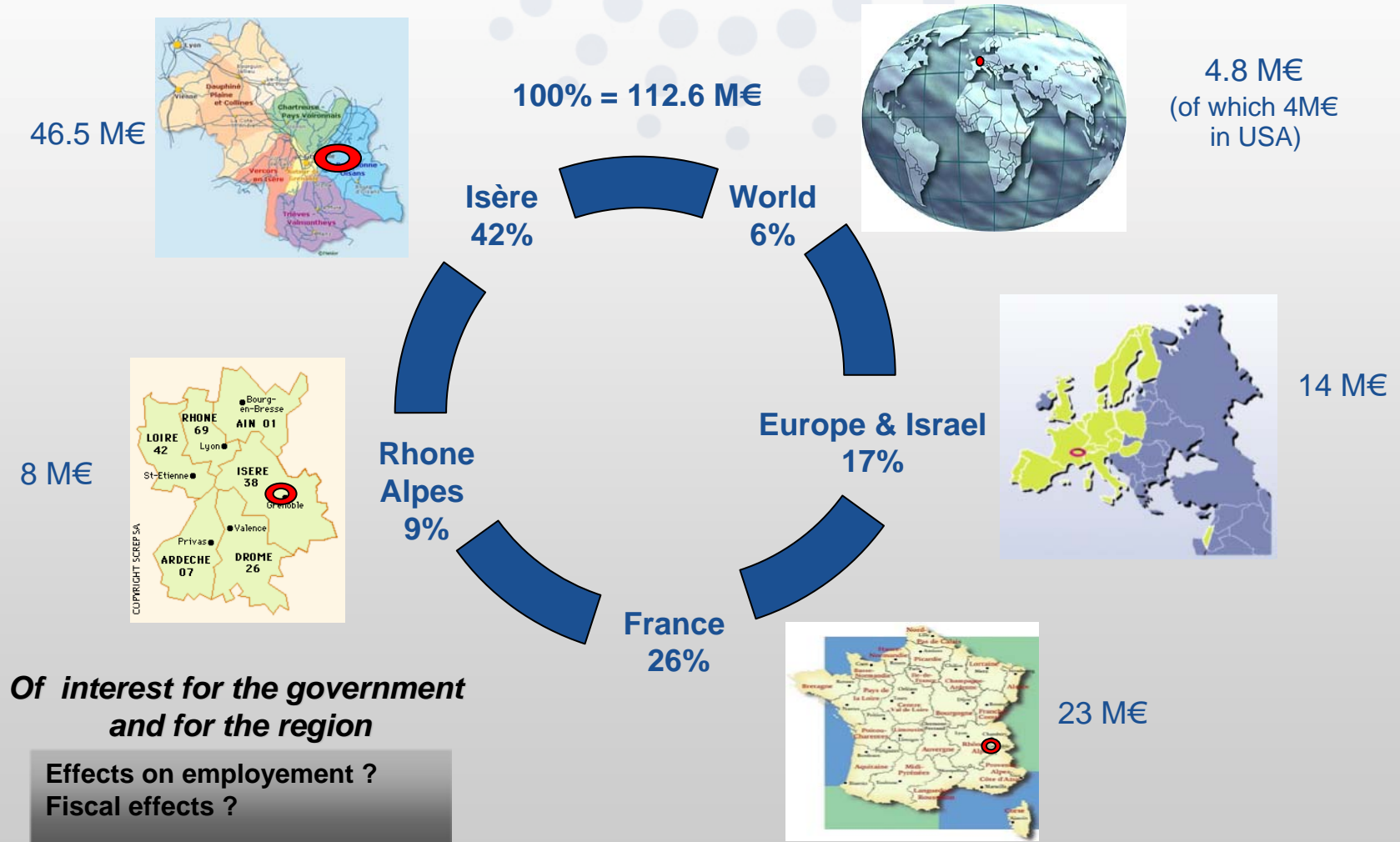


## Effects

- Direct:** salaries, payment to suppliers
- Indirect:** suppliers of suppliers
- Induced:** spending the income
- Fiscal:** taxes paid on the various transactions

→ **Regional, sectoral**

# Direct regional effects of ESRF spending (supplies and services) (Total over 3 years)

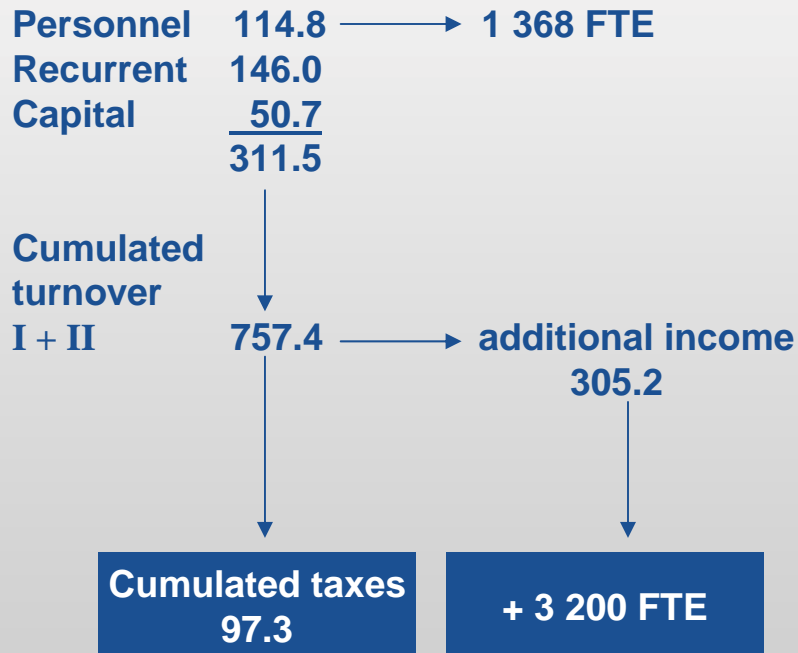


# Employment and Fiscal effects

No detailed study for ESRF yet, but: DESY (1997), CERN (1993)

## DESY 1997

### Budget (Mio DM)



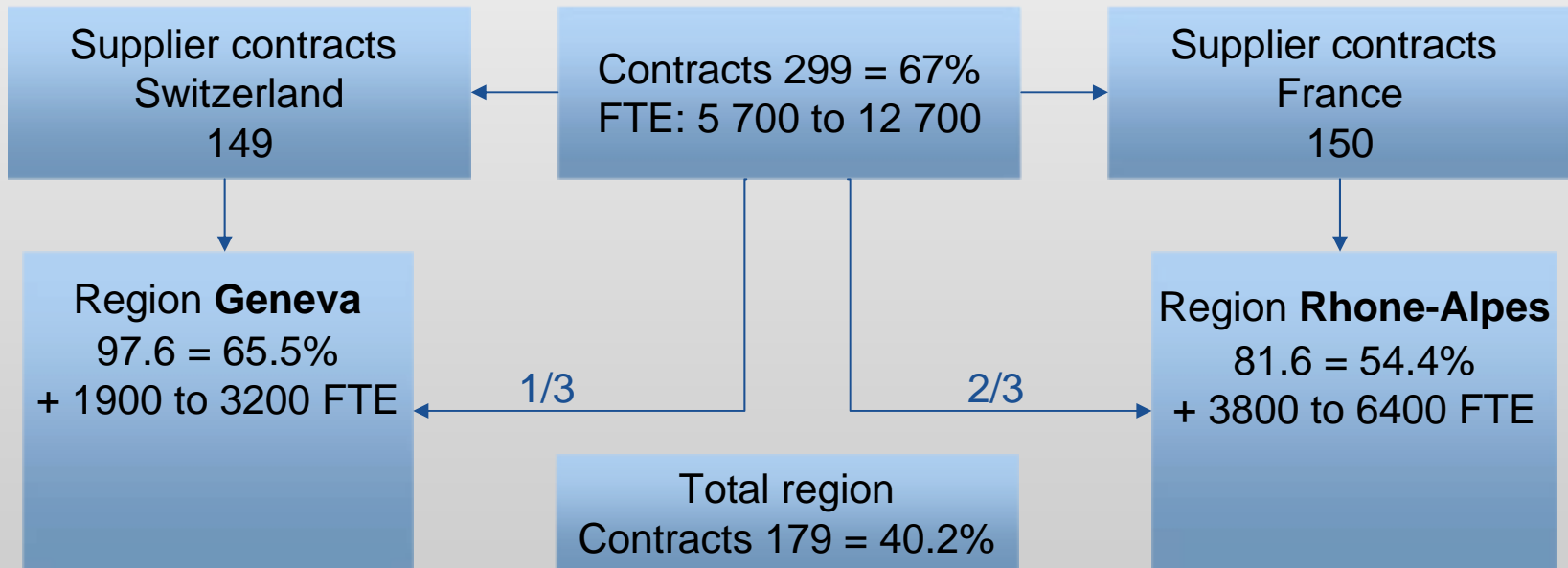
	<i>(Mio DM)</i>		
	FTEs	Income	Turnover
<b>Commerce</b>	1 024	71	137
<b>Service</b>	942	124	273
<b>Construction</b>	142	8	22
<b>Chemistry, oil</b>	140	13	42
<b>Energy</b>	149	27	71
<b>Food</b>	114	10	43
<b>etc.</b>	...	...	...
	<b>3 200</b>	<b>305</b>	<b>757</b>

Hamburg	30,60%	35,90%	25,00%
North Germany	31,90%	29,20%	26,40%
Rest of Germany	37,50%	35,70%	48,60%

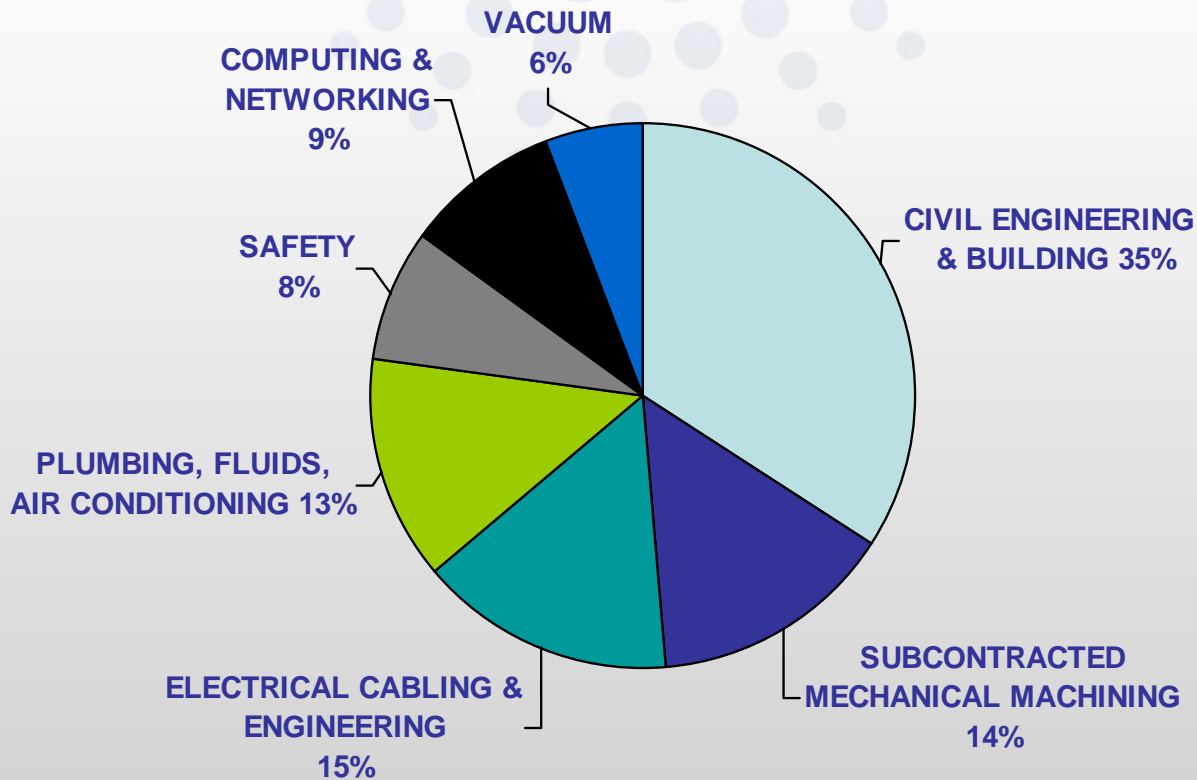
# The CERN study 1993

Budget 1993 (Mio CHF): 945

Personnel 489 → 3 000 FTE (+ 6000 users, 600 students)  
 Recurr., Capital 445



# Regional economic impact, summary (2005-2007)



## *Purchasing details*

Turnover in Isère : 46.5 M€ over 3 years  
 Nb of suppliers : 660

# What part of the salary can be spent?

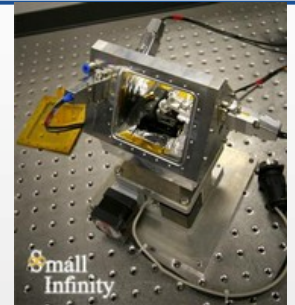
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Total salary costs for ESRF	45.3 M€
Employer's contribution to Social Security	14.8 M€
Employee's contribution to Social Security	6.6 M€
Income tax to be paid by employee	~2.0 M€
Remains to be spent (mostly locally)	~22.0 M€

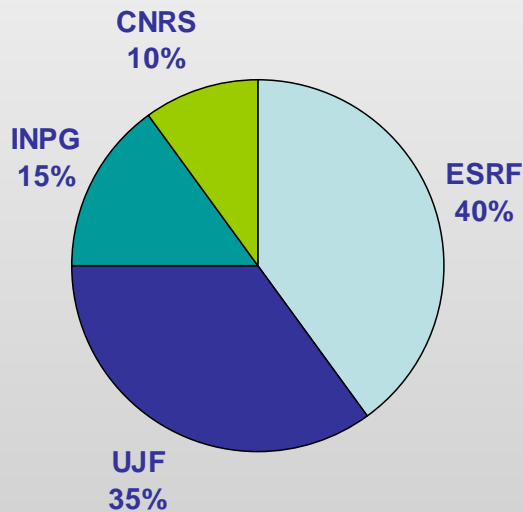


# ESRF Spin- off “Small Infinity” (2007)

Development and production of **Scanning Probe Microscopes** to monitor surface morphology with nanometric resolution.



## Patented invention



## Valorisation process Total support 244 K€ (360K USD)



### GRAVIT

Consurtium founded by CEA, CNRS, INPG, INRIA, UJF, UPMF  
Supporting technical & economic maturation of innovation projects.



### GRAIN

Grenoble Alpes  
INCubation



### RHONE ALPES Region

Funds to support labs

### ESRF

Cumulated costs over 2 years (estim.): 294 K€  
Estimated income in first 24 months: 1.1 Mio €  
2 Scientists involved

# Regional scientific impact

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## ☞ Local schools and universities benefit from ESRF (and ILL)

- ☞ Stimulate and reinforce interest in advanced science, engineering and technology

## ☞ Particular examples include

- ☞ Short-term school/university placements and trainees
- ☞ School/university student visits
- ☞ Joint PhD projects
- ☞ Advanced postdoctorate courses (HERCULES)
- ☞ Joint advanced scientific/technical projects

## ☞ Scientific use of the ESRF by Users from Grenoble and Lyon area (2007)

- ☞ 119 Experiments (13 % of the total)
- ☞ 275 Users
  - ☞ of which proprietary (industrial/comm.)
    - ☞ 7 experiments
    - ☞ 21 users

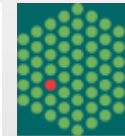
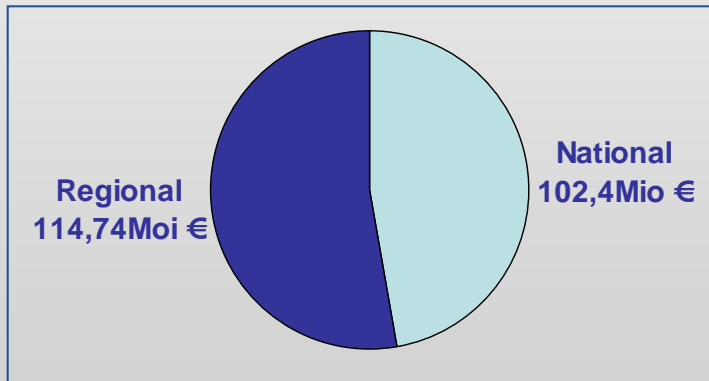
# ESRF and Regional developments plans

- ☞ Support of international development of regional units of research and higher education

## *Contrat de Projets entre l'Etat et la Region*

(Agreement between National and Regional government on large projects)

**216.8 Mio €**



## *European Organisations*

### *in Grenoble*

*(ESRF, ILL, EMBL)*

**15 Mio € including taxes**

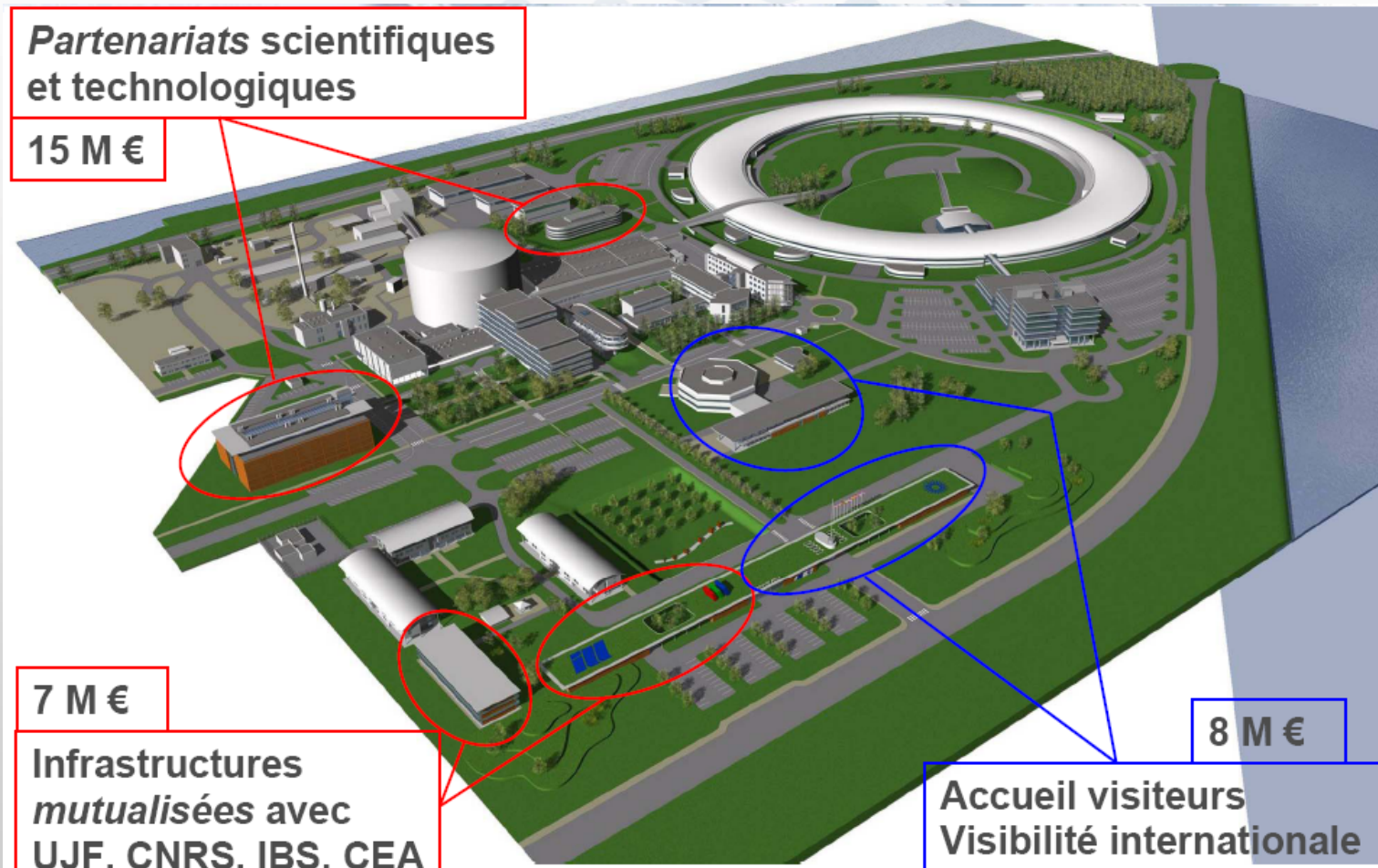
**12 Mio € net**

# “European” part of Polygone Scientifique





# Improving the infrastructure with CPER



# GIANT a “MIT à la Française” ?

Grenoble Isère Alpes Nano Technologies



*Major urban development*  
*“Polygone Scientifique”*  *“Peninsula of the Future”*



- ☞ Integrate the Campus into the urban context
- ☞ Improve the links between the “Polygone” and the University campus

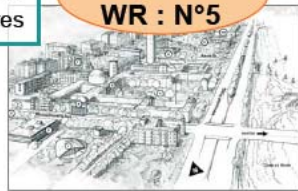


## Le projet GIANT sur le polygone scientifique Comparaison avec les meilleurs mondiaux

**Budget : 1 660M€**  
(dont 477M€ au Lincoln Lab)  
10 700 personnes  
(dont 2540 au Lincoln Lab)  
10 300 étudiants  
(post-docs et thésards compris)  
4 100 publications  
265 brevets  
68 hectares



Shanghai 2006  
WR : N°5

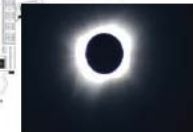


**Budget : 2 008M€**  
(dont 1630M€ au JPL)  
8785 personnes  
(dont 5200 au JPL)  
dont 534 post-docs  
2 090 étudiants  
3442 publications  
148 brevets  
(JPL : 72 ha)

CALTECH



Shanghai 2006  
WR : N°6



**Budget : 750M€**  
dont investissement : 100M€  
6 000 personnes  
dont 1 100 post-docs et thésards  
6 000 étudiants  
5 000 publications  
300 brevets

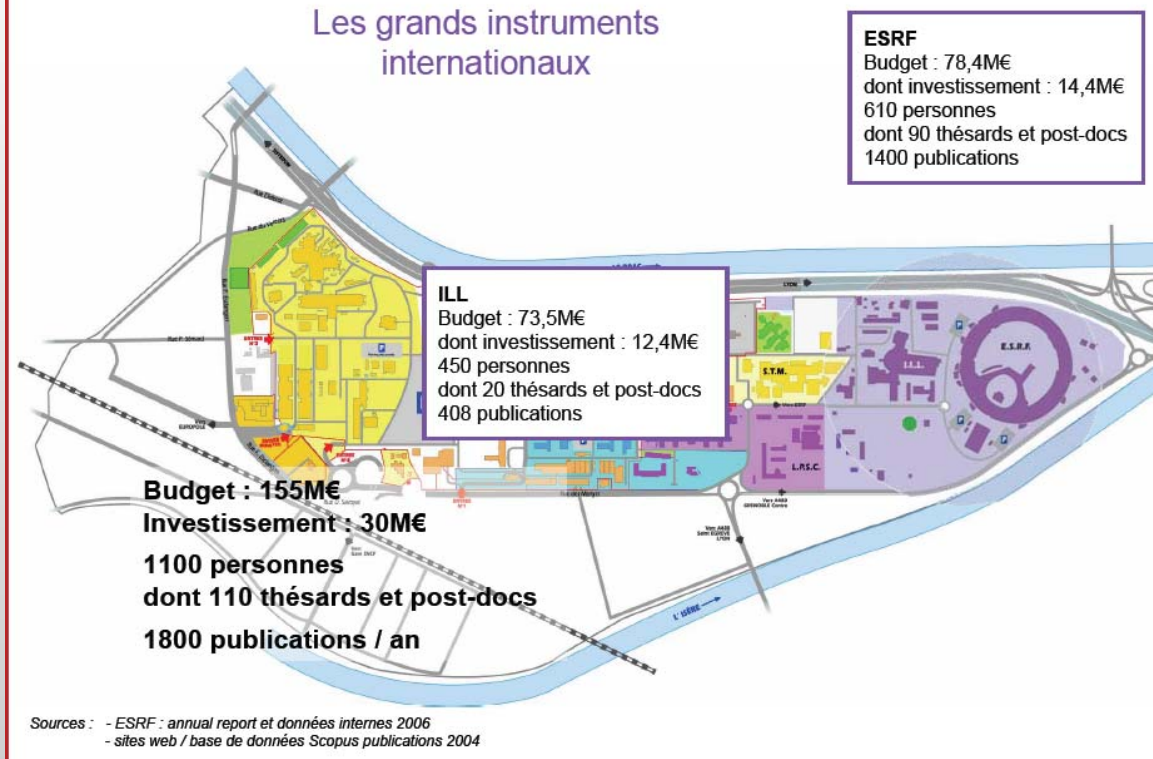


Sources : sites web / base de données Scopus ou ISI publications 2004 / Brevets Micropatent 2004

## Le projet GIANT sur le polygone scientifique

### Les forces en présence en sciences de base : grands instruments

#### Les grands instruments internationaux











**Thanks for your attention**