

A Light for Science





Three-Way Meeting APS 17-19 March 2008

- **X-ray source**
 - ❑ Performance
 - ❑ Machine modes
- **Beamlines and Experiments**
 - ❑ Proposal and User statistics
- **Publication statistics**

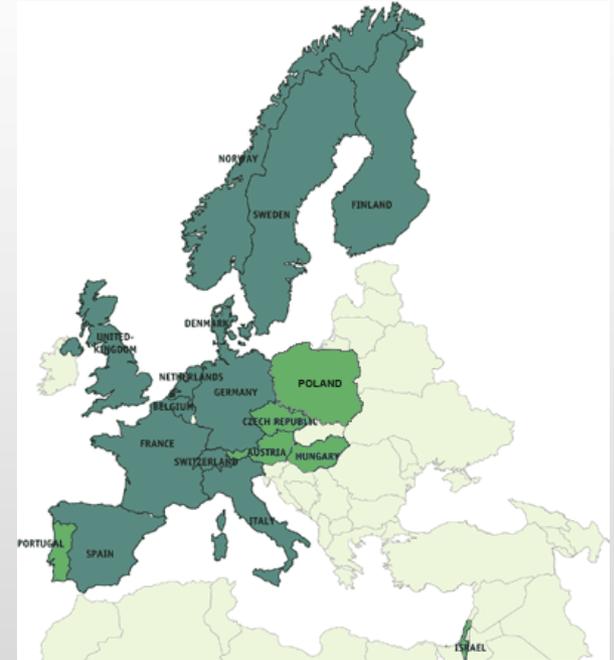


Three-Way Meeting APS 17-19 March 2008

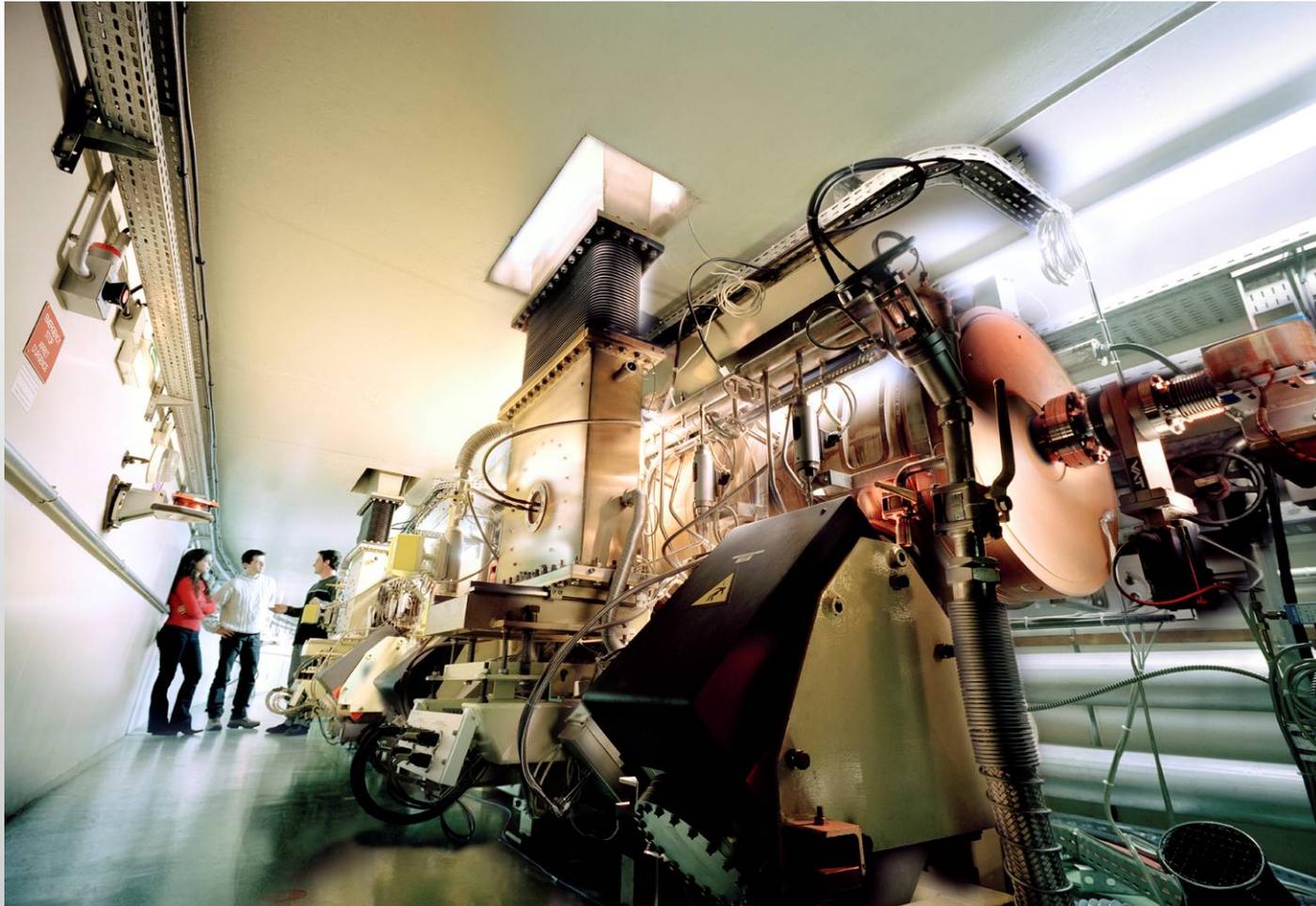
- **Industrial and Commercial Unit**
 - ❑ Beamtime sales
 - ❑ Licence income
- **Upgrade Programme**
 - ❑ Current status

The European Synchrotron Radiation Facility

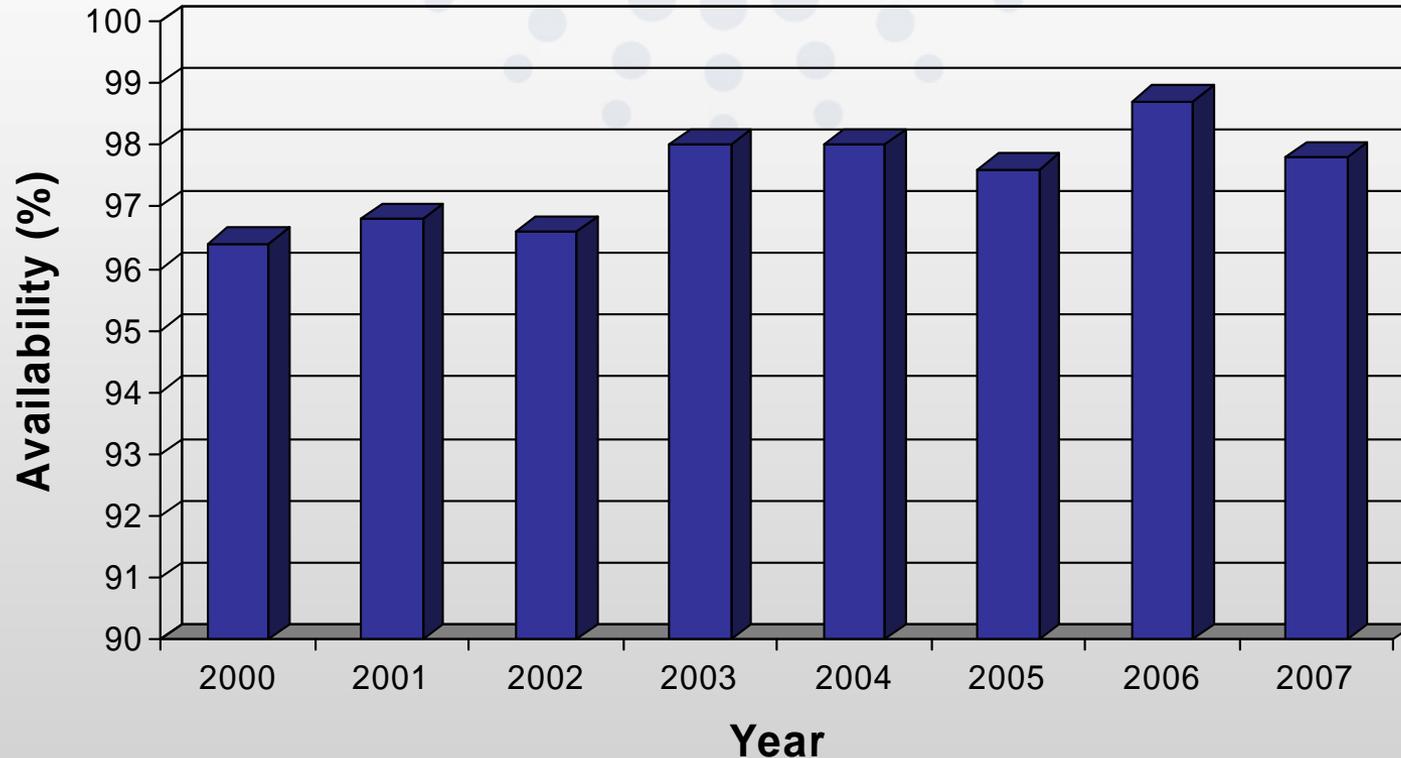
- Partnership between 18 countries
 - ❑ Next members ? Slovakia, Slovenia (Russia)
- Annually:
 - ❑ ~ 1900 proposals (44% accepted)
 - ❑ ~ 6000 user visits
 - ❑ ~ 3500-4000 individuals
 - ❑ ~ 1500 experimental sessions
 - ❑ ~ 1500 publications on ESRF work
- 43 SR beamlines
- 600 staff
- Annual budget ~80 M€



Accelerator and Source Division

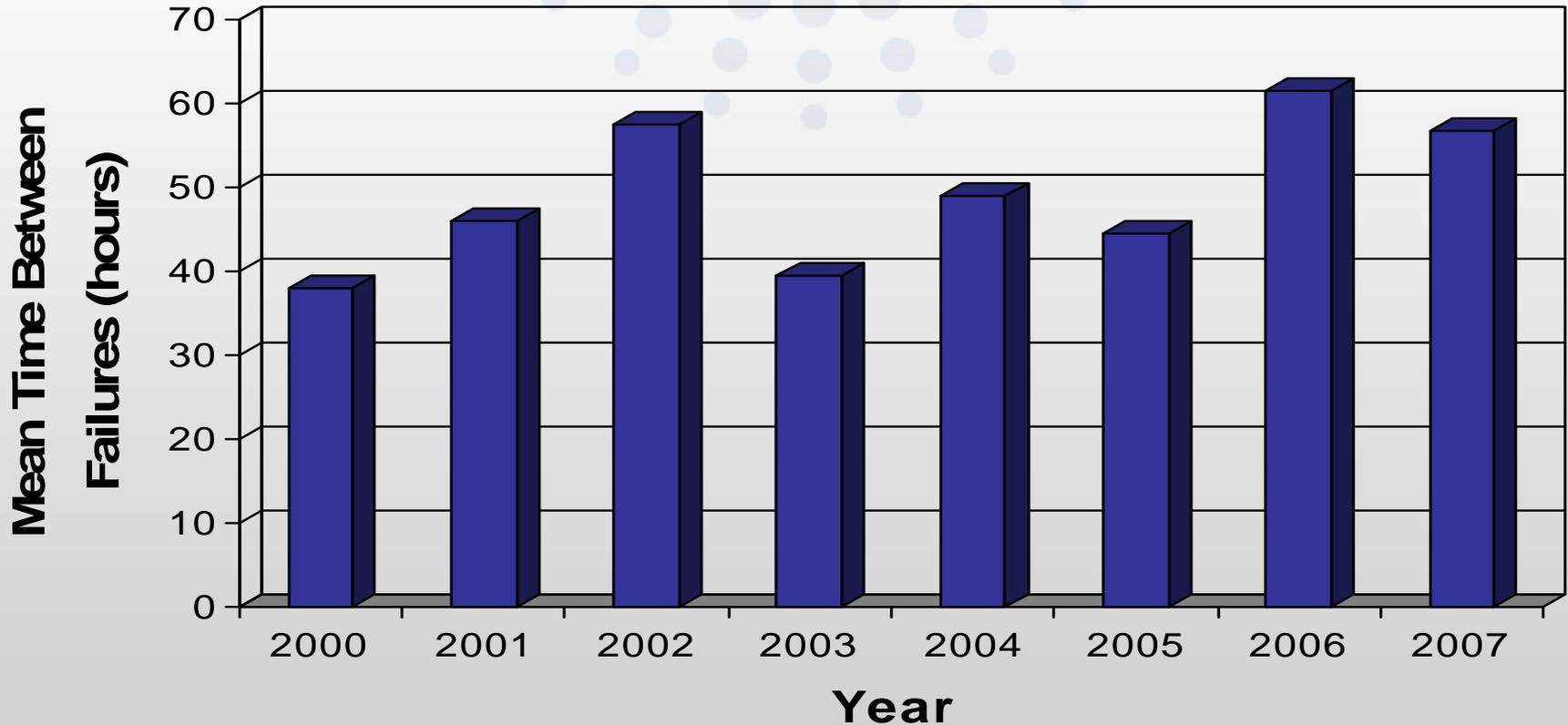


Accelerator and Source Division Source Availability (%)



- 75 hours lost (stripline failure) during run 2007-03
- 48 hours returned for Users later

Mean Time Between Failures (hours)



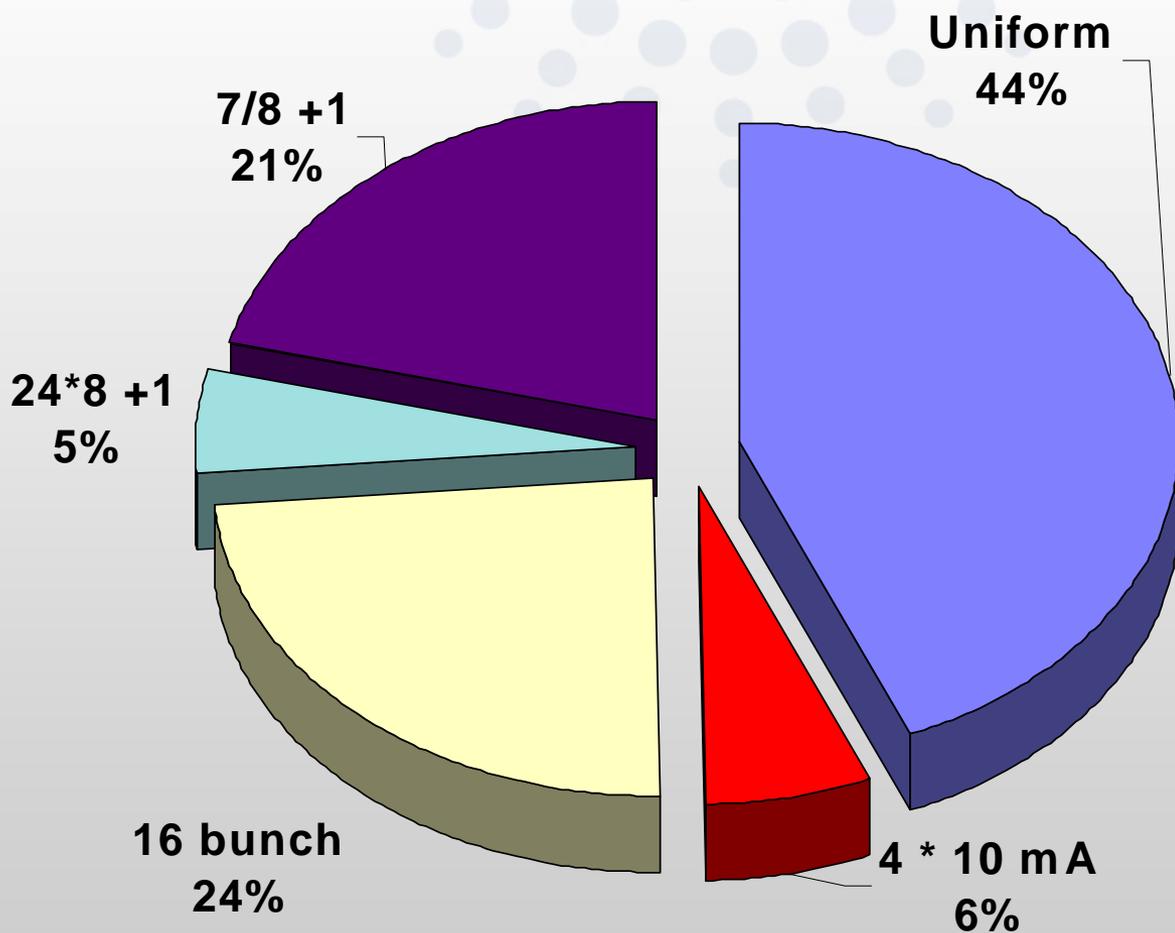
Machine Statistics for 2005-2007

	2005	2006	2007
Availability (%)	97.6	98.7	97.8
MTBF (hrs)	44.4	61.5	56.8
MDOF (hrs)	1.1	0.8	1.2
No of failures	123	85	96

MTBF = Mean Time Between Failures

MDOF = Mean Duration of a Failure

Filling Modes in 2007



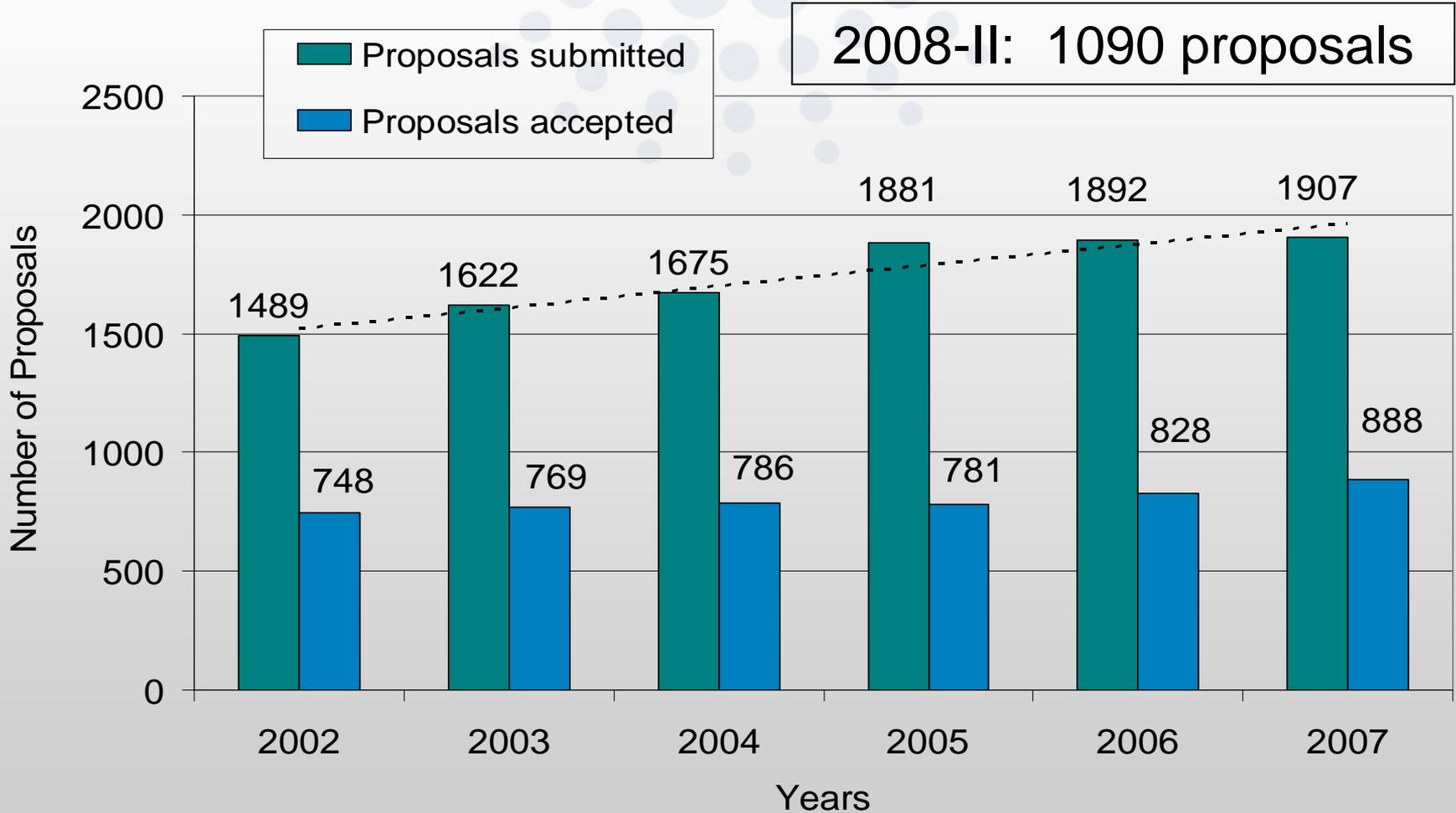
2006

Uniform:	45%
2 x 1/3:	18%
4 x 10 mA:	6%
16 bunch:	23%
Hybrid 24 x 8:	8%

Proposals and Scheduling



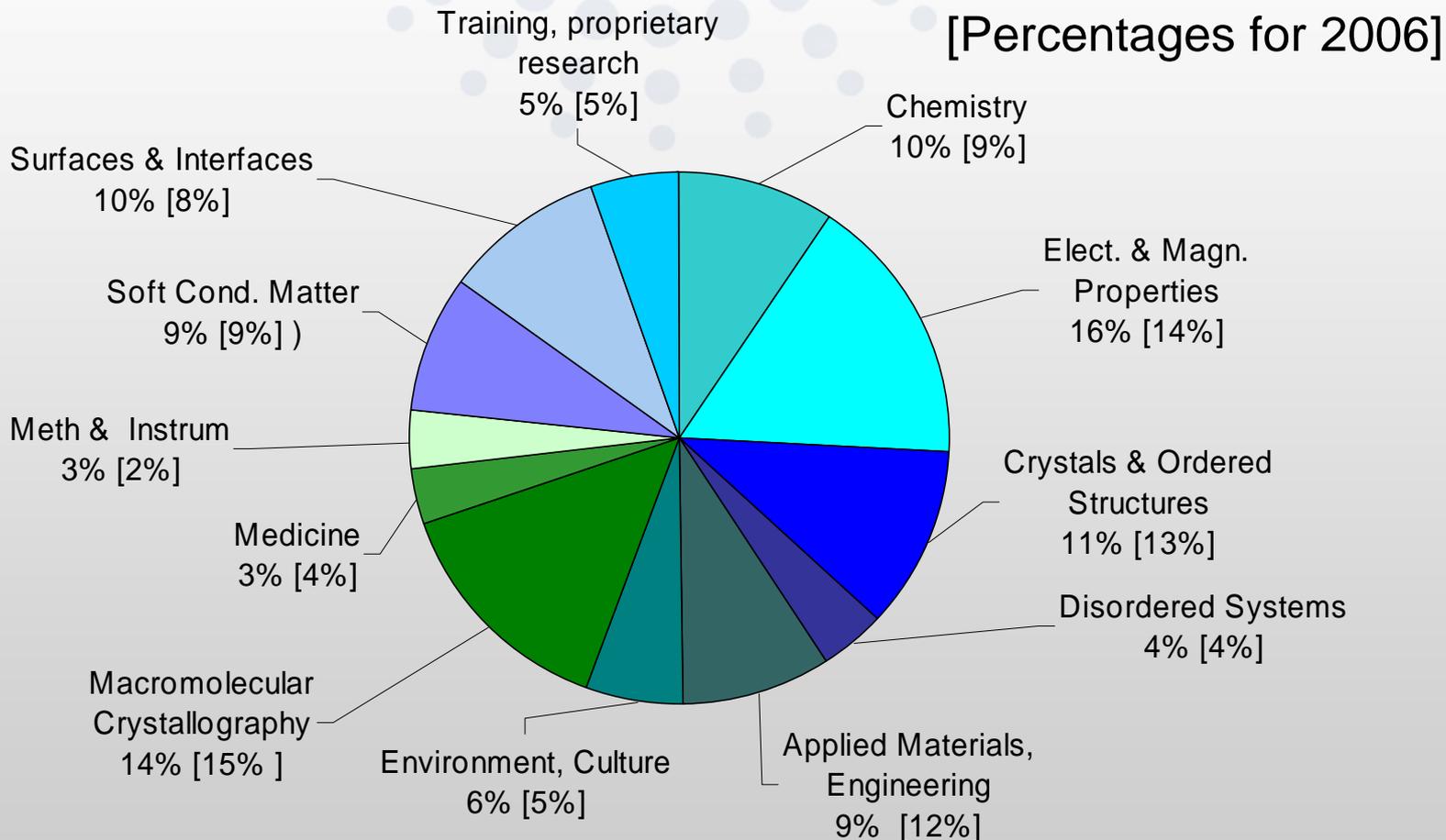
Proposals submitted and accepted 2002 - 2007



Proposals submitted to Review Committees: 2006 - 2007

Review Committees	Proposals submitted	
	2006	2007
Chemistry	236	210
Electronic & Magnetic properties	264	319
Ordered Structures	251	259
Disordered Systems	117	106
Applied Materials, Engineering	250	202
Environment & Culture	128	134
Macromolecular Crystallography	129	153
Medicine	68	53
Methods & Instrumentation	61	52
Soft Condensed Matter	230	225
Surfaces & Interfaces	158	194
Totals:	1892	1907

Shifts delivered for experiments 2007/I: total 7069



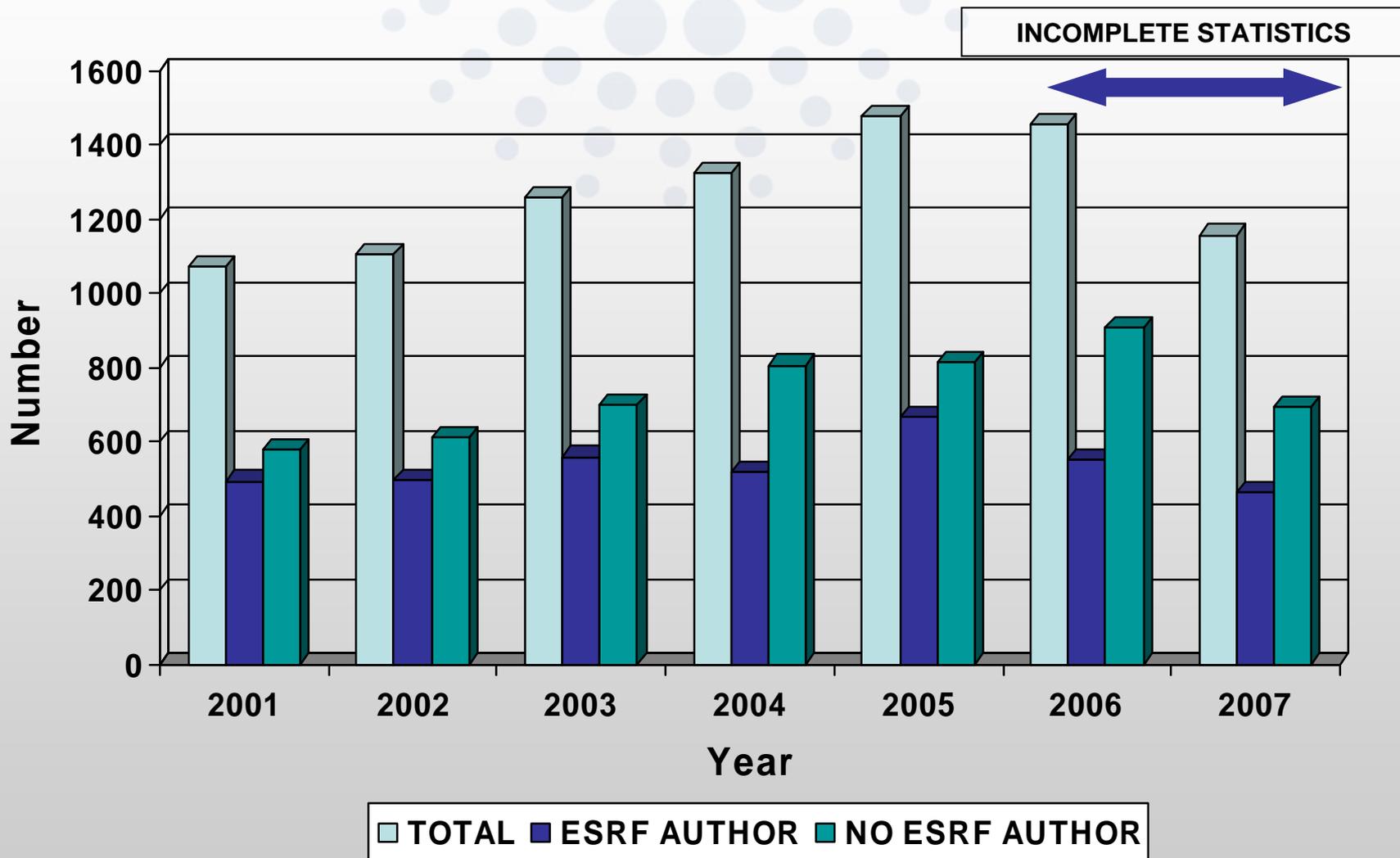
Overview of Operation with Users: 2001-2007

Year	BLs	CRGs	Experiments	Shifts	User Visits
2001	30	8	1116	12 918	4358
2002	30	8	1165	13 295	4802
2003	30	8	1282	14 273	5140
2004	31	10	1355	14 772	5488
2005	31	11	1349	14 005	5565
2006	31	11	1510	15 534	6092
2007	31	11	1539	15 342	6222

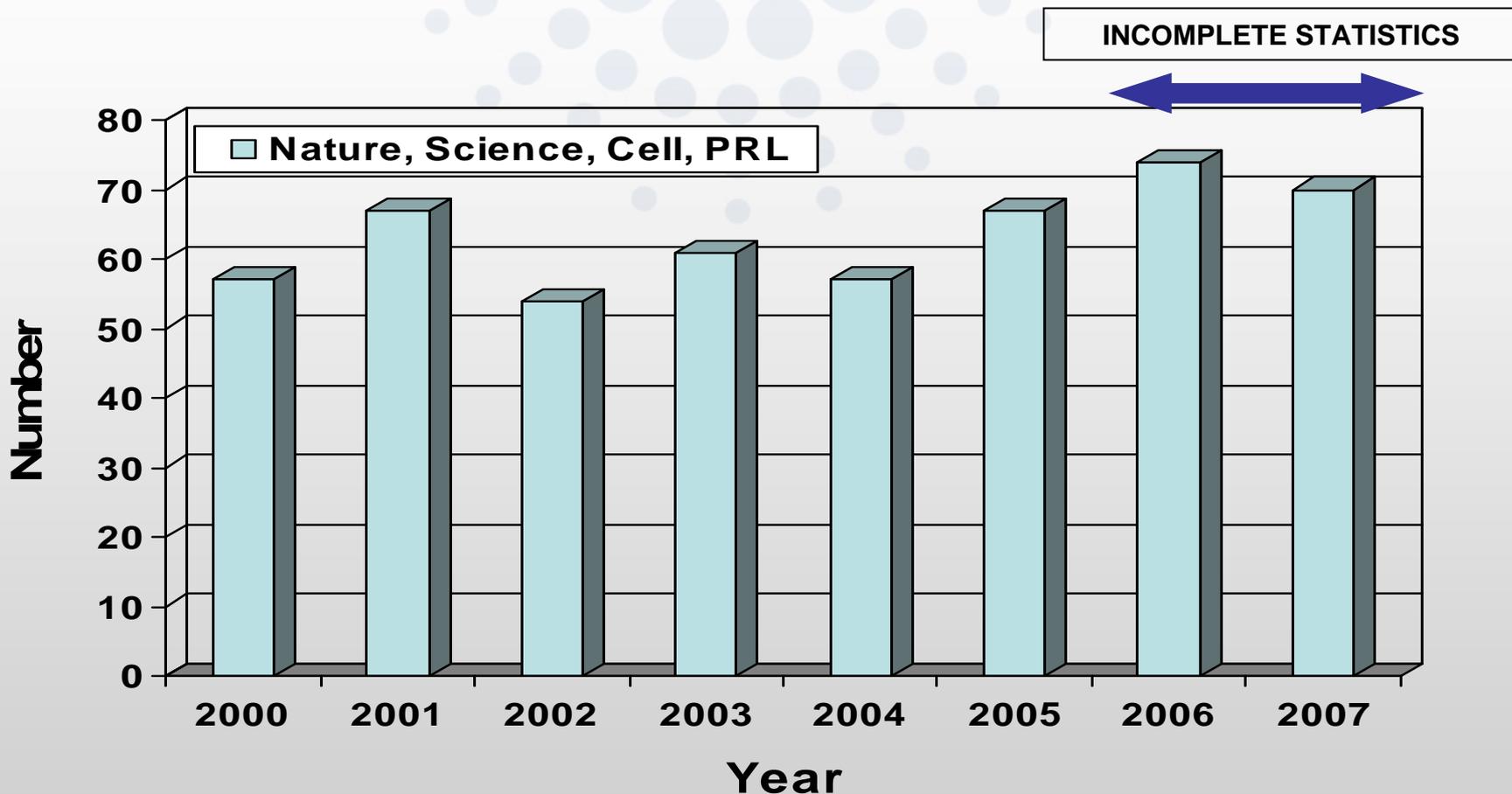
Publications



ESRF Refereed Publications

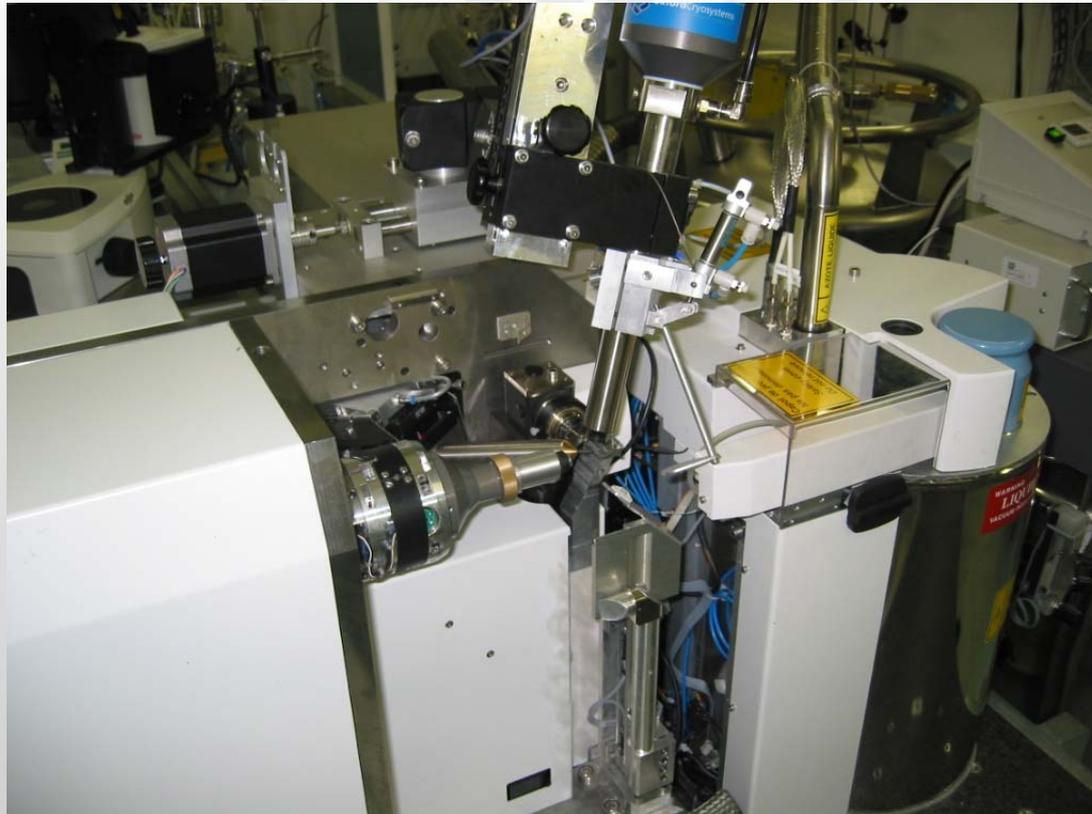


ESRF High Impact Publications

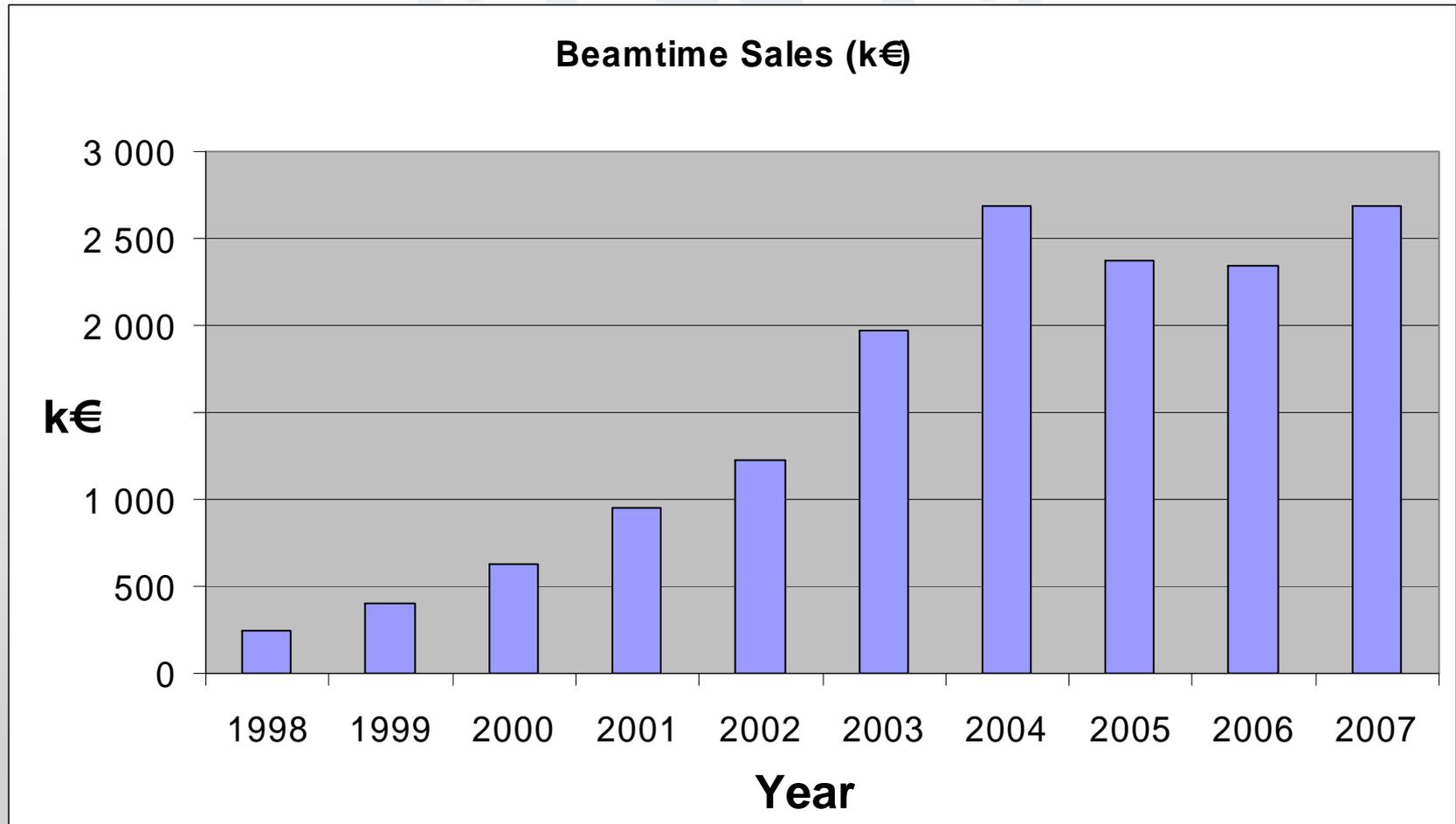


Annual averages: Nature, 13; Science, 15; Cell, 4; PRL, 38

Industrial and Commercial Unit



ESRF Industrial Income (beamtime sales)



~20% – 25% of academic use of ESRF is industry-oriented

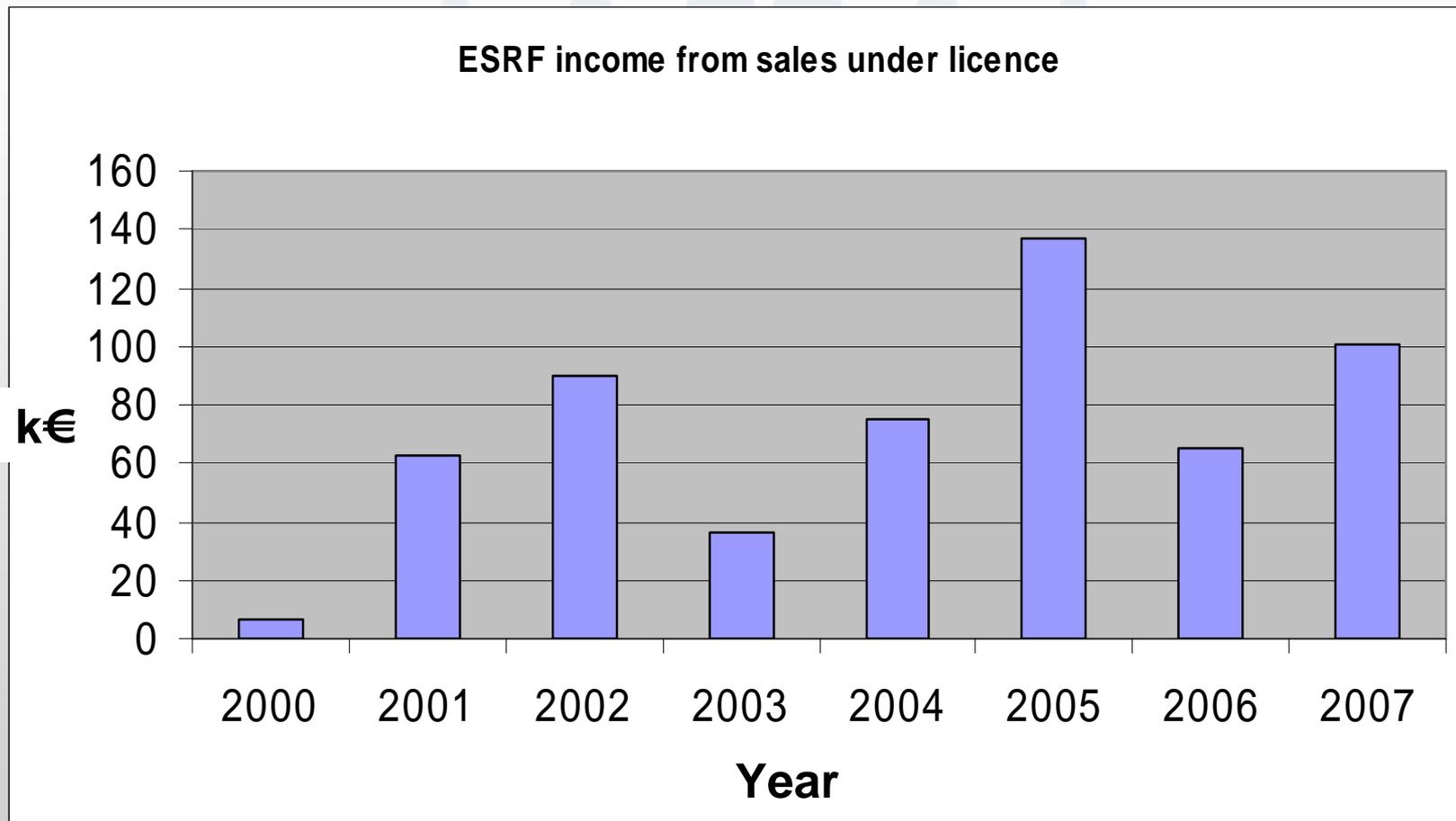
Beamtime sales by beamline and scientific area/technique: 2006

• ID14, ID23, ID29	1,681 k€	(71.8%)	MX/PX
• ID08, ID24	297 k€	(12.7%)	XAS, EXAFS
• ID19, ID21	184 k€	(7.8%)	Imaging
• ID02, ID13	104 k€	(4.4%)	SCM (Nano/SAXS)
• ID11, ID15, ID31	71 k€	(3.0%)	Materials
• Other	5 k€		
Total	2,341 k€		

Beamtime sales by beamline and scientific area/technique: 2007

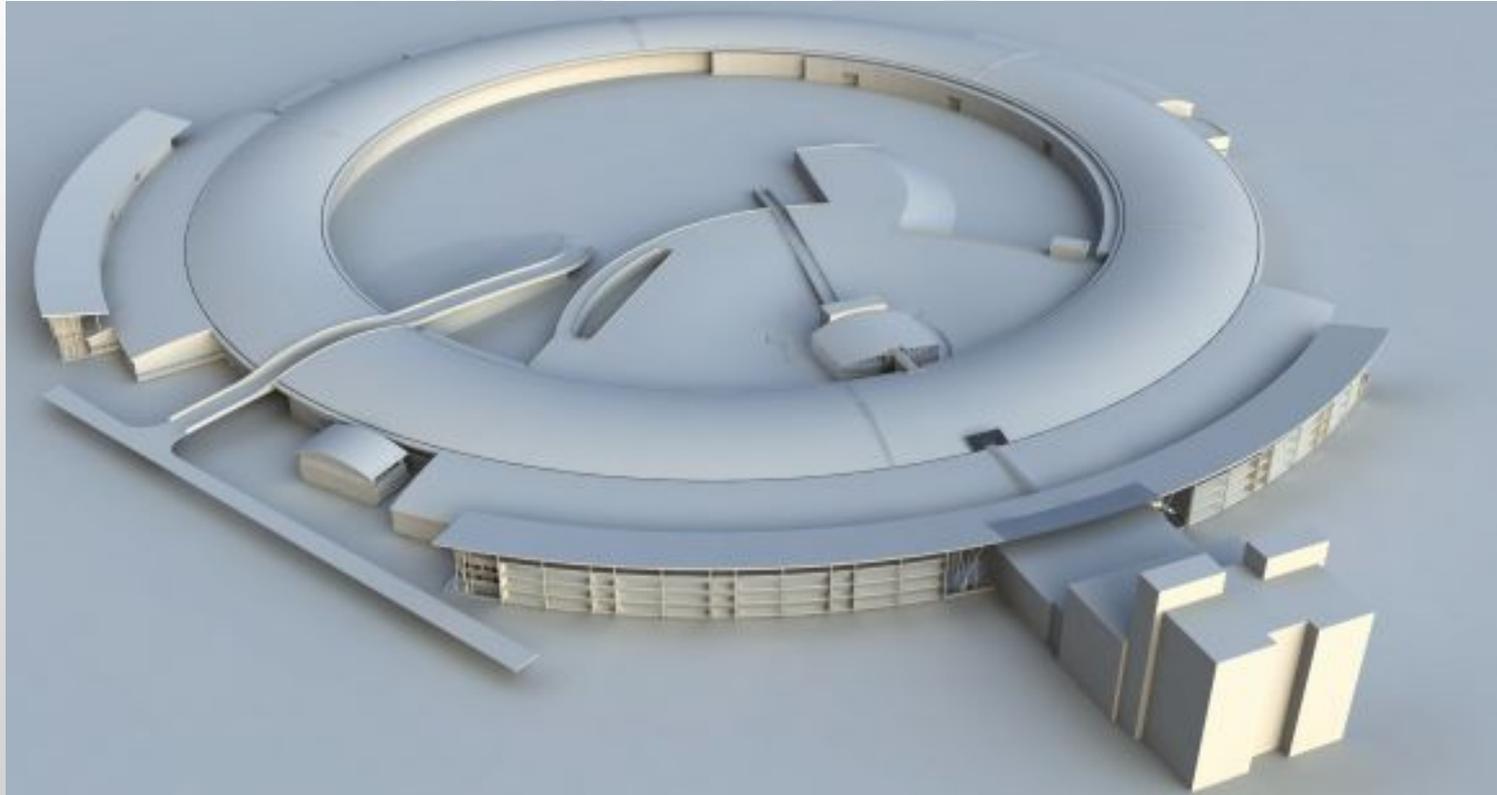
- ID14, ID23, ID29 2,008 k€ (74.8%) MX/PX
 - ID08, ID24 160 k€ (6.0%) XAS, EXAFS
 - ID19, ID21 229 k€ (8.5%) Imaging
 - ID02, ID13 176 k€ (6.6%) SCM (Nano/SAXS)
 - ID11, ID15, ID31 111 k€ (4.1%) Materials
- Total 2,684 k€ (4.04 M\$)**

ESRF Licence Income



Insertion devices, electronic boards, mechanical components ...

Upgrade Programme



Five “Highlight” Scientific Fields

Nano-Science and
Nano-Technology

Structural/functional Biology
and Soft Matter

Pump-Probe Experiments
Time Resolved Diffraction

Science at
Extreme Conditions

X-ray Imaging

Instrumentation
Detectors, nano-positioning ...

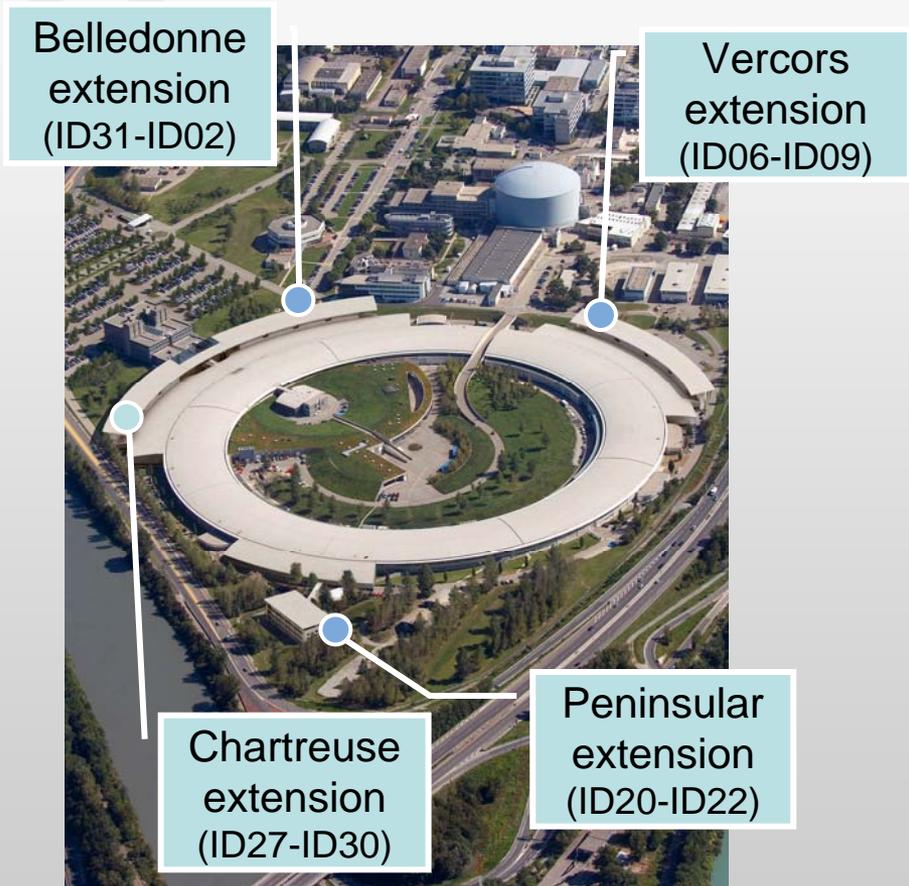
Scientific Partnerships
(cf PSB)

Experimental Hall extensions

For very long beamlines, laboratories ...



TODAY



TOMORROW

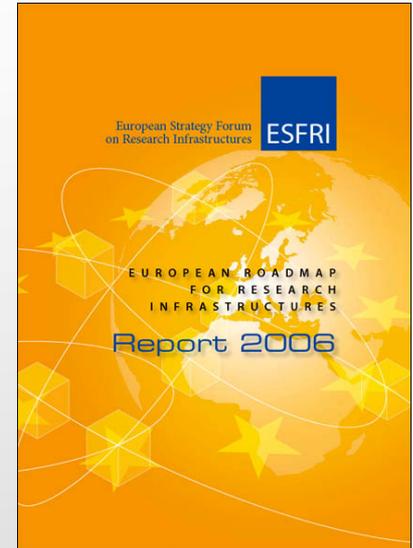
Upgrade Programme: recent activity

- 06/07: distribution of Upgrade brochure “Leading Science for Europe”
- Summer: AFC working group on financing
 - ❑ Led to proposals for Phases I and II
- Summer/Autumn: visits to Partner countries by Chairman of Council and Directors
 - ❑ Switzerland, France, Italy, Germany, The Netherlands, Belgium, Denmark, Sweden, Norway, Spain, (UK) ...



Upgrade Programme: recent activity

- The ESRF Upgrade Programme was selected for inclusion in the ESFRI 2006 Roadmap
 - ❑ *unique, large scale Infrastructure*
 - ❑ *critical to the ERA*
 - ❑ *with excellence in research and education*
- 09/07: ESRF's EC ("ESFRI") application successful
 - ❑ 5 M€ awarded to ESRF for preparatory phase of Upgrade
 - ❑ Building contracts, detector strategy, high magnetic field lab ...



Upgrade Programme: recent activity

- 24/10/07: Upgrade Information and Discussion Meeting (Users, experts ...)
- Purple Book formally launched
 - ❑ A directory of ideas: new and refurbished beamlines, accelerator upgrades, engineering and computing projects....
- 11/07: “candidate” beamlines for Phase I
- 12/07: work underway on tender preparation for building extensions



The 11 possible “candidate” beamlines for Phase I: smaller, faster ...

UPBL1: (nano) miniaturising electronic, optic and magnetic devices

UPBL2: (time resolved, imaging, nano) materials research to

UPBL3: (nano, extreme) study individual objects to understand

UPBL4: (nano, imaging, life) imaging at the nanoscale e.g. tracing elements at the sub-cellular level

UPBL5: (imaging) many applications in art, archeology, fossils,

UPBL6: (nano, extreme) fundamental properties of matter to

UPBL7: (nano, extreme) magnetic and magneto-optical

UPBL8: (Nano, life-soft matter) linking hierarchical structure to

UPBL9: (nano, life, p&p time-resolved) looking at “real”

UPBL10: (life) finding-the-needle-in-the-havstack: drug design

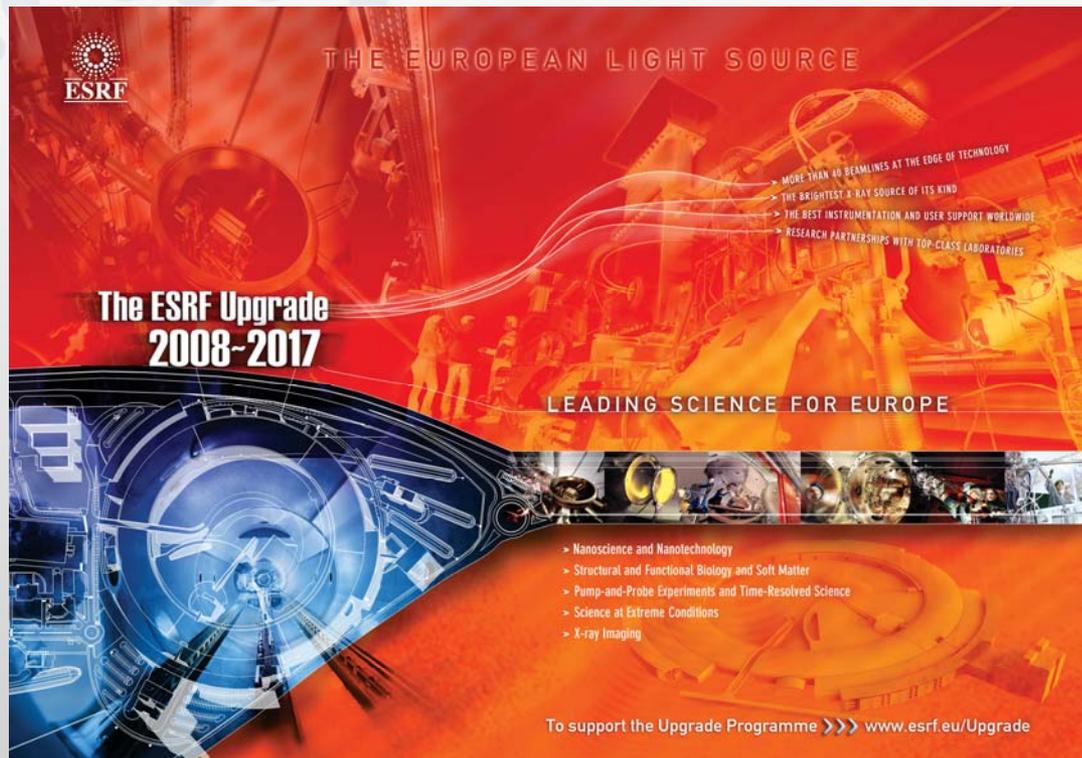
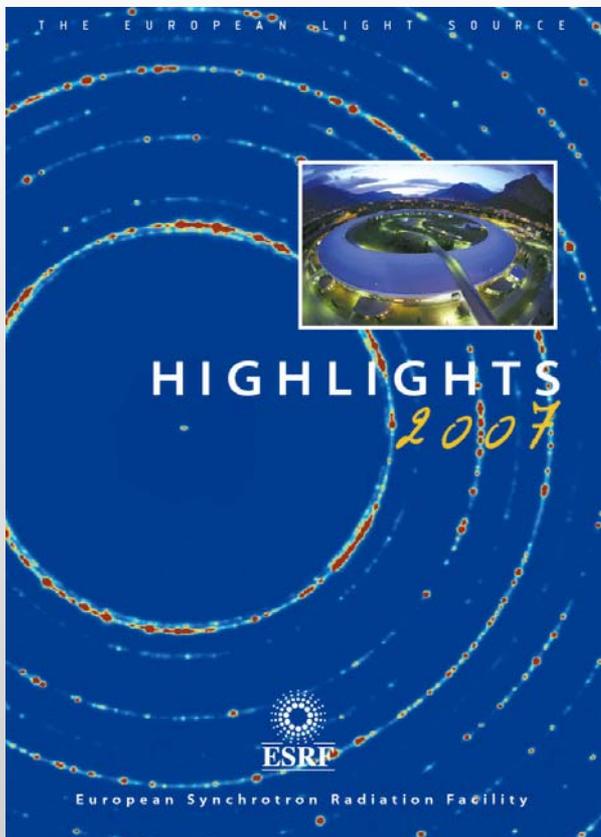
UPBL11: (nano, extreme, p&p time-resolved) in-situ processes, catalysts, nano-reactors

Upgrade Programme: what's next?

Key dates in 2008

- 15 January: Heads of Delegation Meeting, Geneva
 - ❑ All Member States very positive on the science
 - ❑ Working on financing scenarios (but no promises – yet)
- End of February: start tender exercise (architect) for Experimental Hall extensions
- 14 April: Heads of Delegation Meeting
- 15-16 May: Administrative and Finance Committee
- 22-23 May: Science Advisory Committee
- **16-17 June: Council - green light?**

Highlights 2007



Changes to Management

Between autumn 2008 and summer 2009, all senior management of ESRF will be renewed

- Director of Administration (11/08)
- Director General (01/09): F. Sette
- Director of Accelerator and Source Division (03/09)
- Directors of Research (01/09, 06/09)

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