



# ELAN in 2005



## Annual Meeting



F. Richard LAL/Orsay



# ELAN in 2005

- Support of the International Linear Collider effort at the European level

Several workshops on key issues for ILC, in particular the **London meeting**

- Support on new techniques of acceleration  
The **Paris meeting** and NEST **Euroleap**

- Continuous outreach effort: 18 **ELAN-Documents** issued, **Web sites** updated

# The Global Design Effort for ILC

## – The Mission of the GDE

- Produce a design for the ILC that includes a detailed design concept, performance assessments, reliable international costing, an industrialization plan , siting analysis, as well as detector concepts and scope.
- Coordinate worldwide prioritized proposal driven R & D efforts (to demonstrate and improve the performance, reduce the costs, attain the required reliability, etc.)

# GDE Members

Chris Adolphsen, SLAC

Jean-Luc Baldy, CERN

Philip Bambade, LAL, Orsay

Barry Barish, Caltech

Wilhelm Bialowons, DESY

Grahame Blair, Royal Holloway

Jim Brau, University of Or

Karsten Buesser, DESY

Elizabeth Clements, Ferm

Michael Danilov, ITEP

Jean-Pierre Delahaye, CE

Gerald Dugan, Cornell Un

Atsushi Enomoto, KEK

Brian Foster, Oxford University

Warren Funk, JLAB

Jie Gao, IHEP

Terry Garvey, LAL-IN2P3

Hitoshi Hayano, KEK

Tom Himel, SLAC

Bob Kephart, Fermilab

Eun San Kim, Pohang Acc Lab

Hyoung Suk Kim, Kyungpook Nat'l Univ

Shane Koscielniak, TRIUMF

Vic Kuchler, Fermilab

Lutz Lilje, DESY

Tom Markiewicz, SLAC

David Miller, Univ College of London

Shekhar Mishra, Fermilab

Youhei Morita, KEK

Olivier Napoly, CEA-Saclay

Hasan Padamsee, Cornell University

DESY

SLAC

DESY

mondi, INFN

eimer, SLAC

Francis Richard, LAL-IN2P3

Perrine Royole-Degieux, GDE/LAL

Kenji Saito, KEK

Daniel Schulte, CERN

Tetsuo Shidara, KEK

Sasha Skrinksky, Budker Institute

Fumihiko Takasaki, KEK

Laurent Jean Tavian, CERN

Nobu Toge, KEK

Nick Walker, DESY

Andy Wolski, LBL

Hitoshi Yamamoto, Tohoku Univ

Kaoru Yokoya, KEK

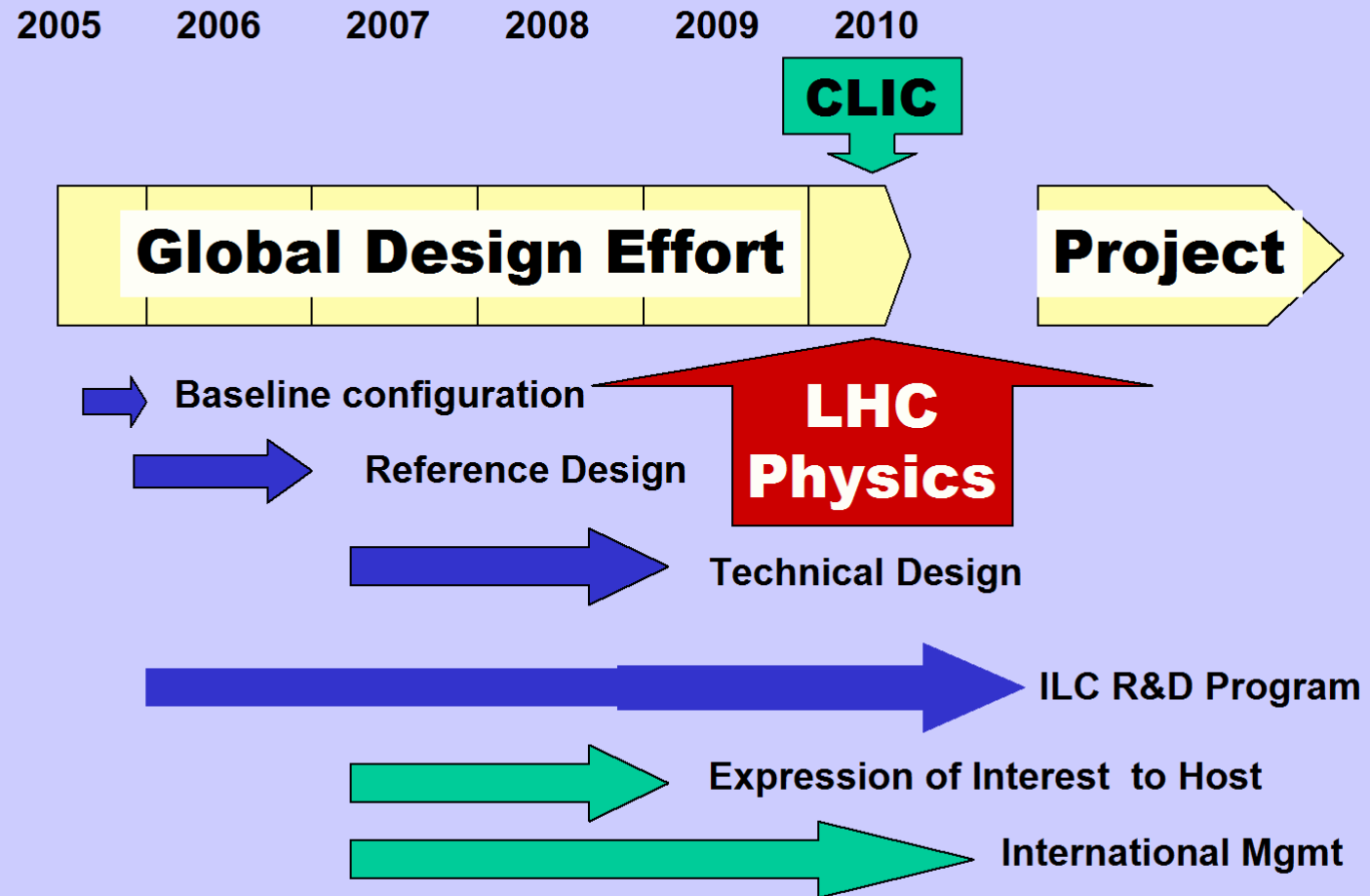
Americas 16

Europe 21

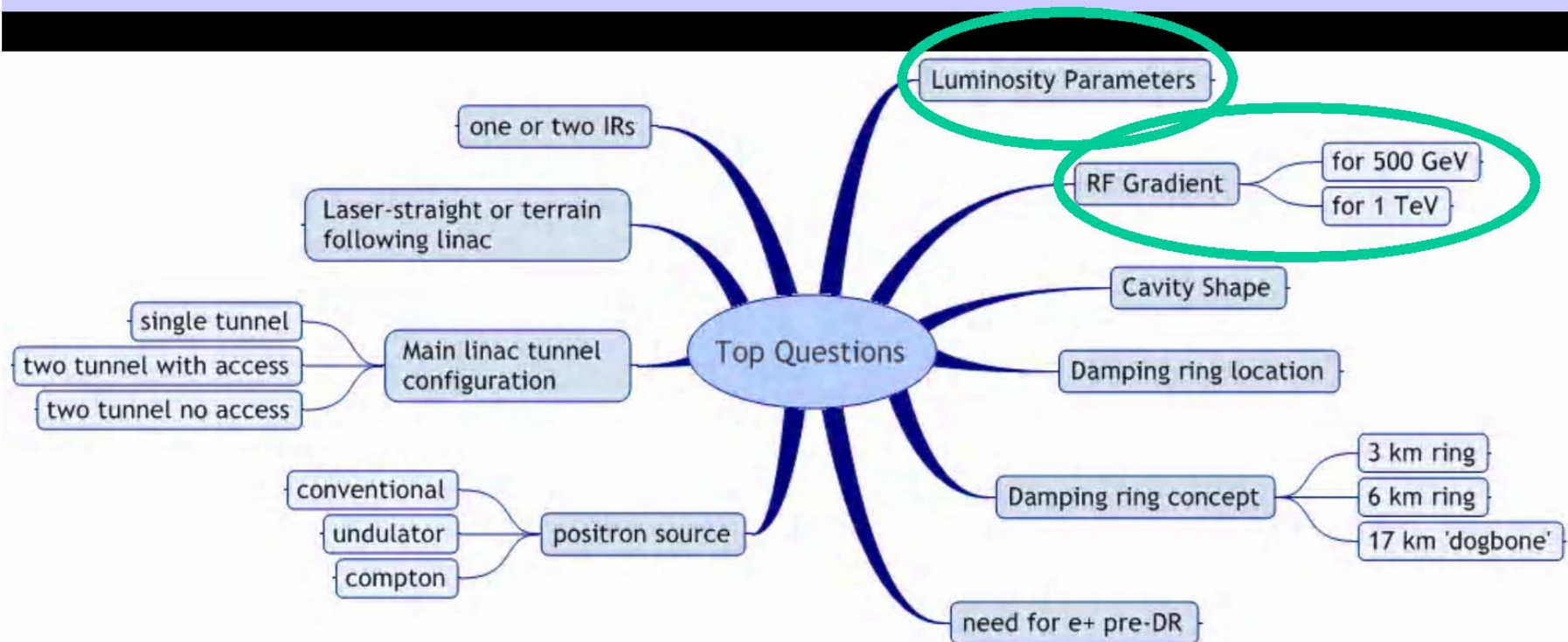
Asia 12

49 members

# The GDE Plan and Schedule

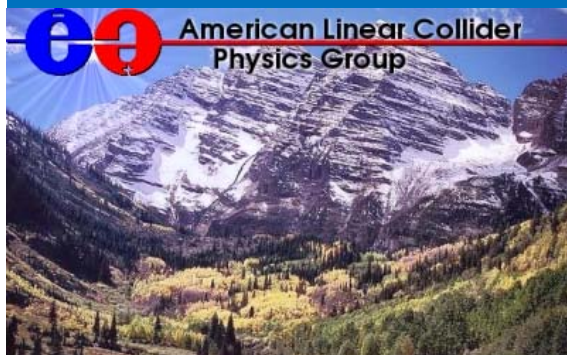
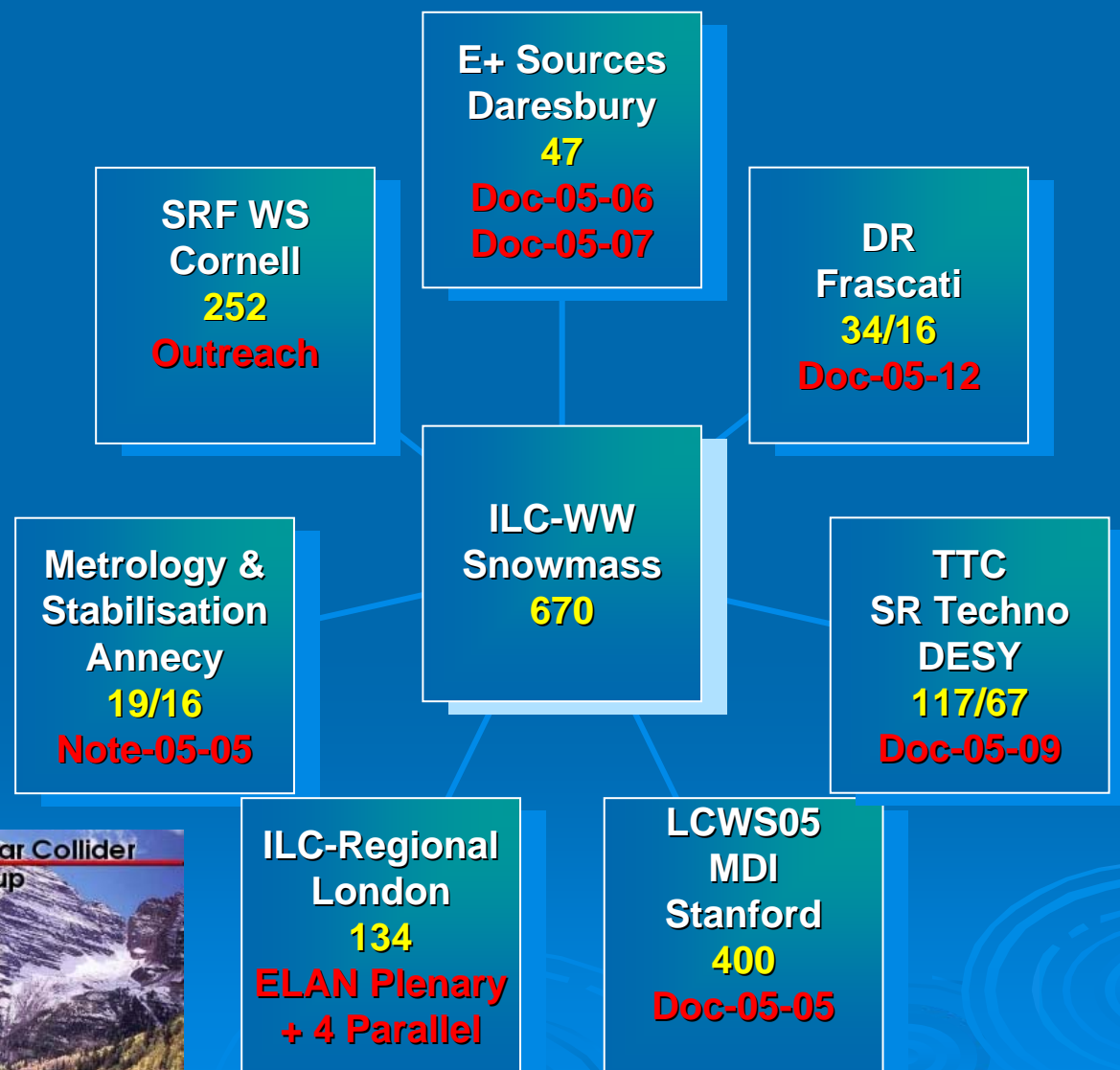


# The Key Decisions



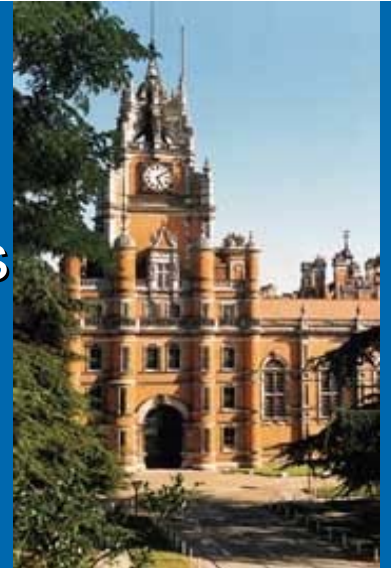
**Critical choices: luminosity parameters & gradient**

*2005 International Linear Collider Physics and Detector Workshop  
and Second ILC Accelerator Workshop  
Snowmass, Colorado, August 14-27, 2005*



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# The London Meeting



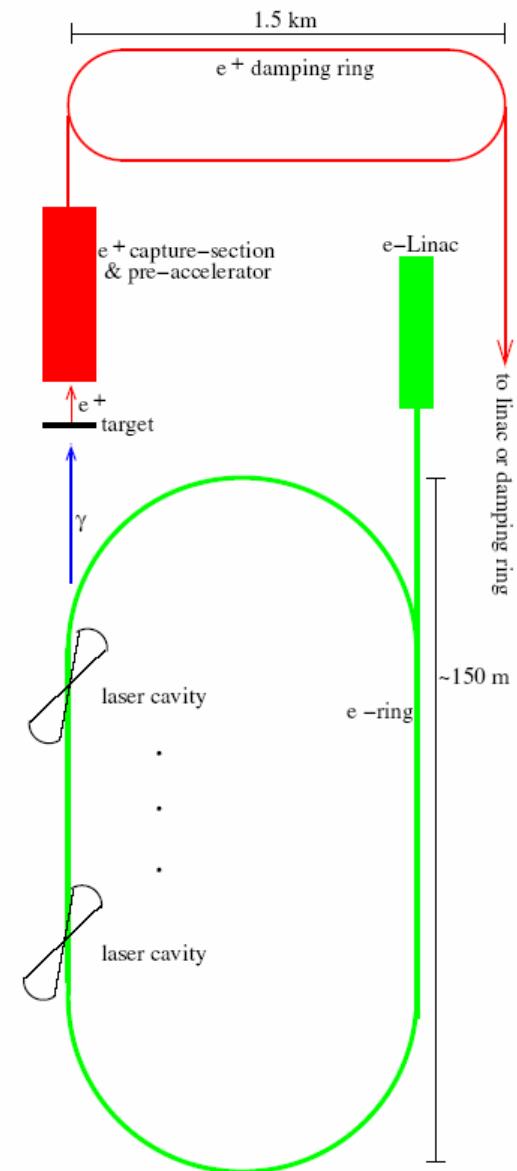
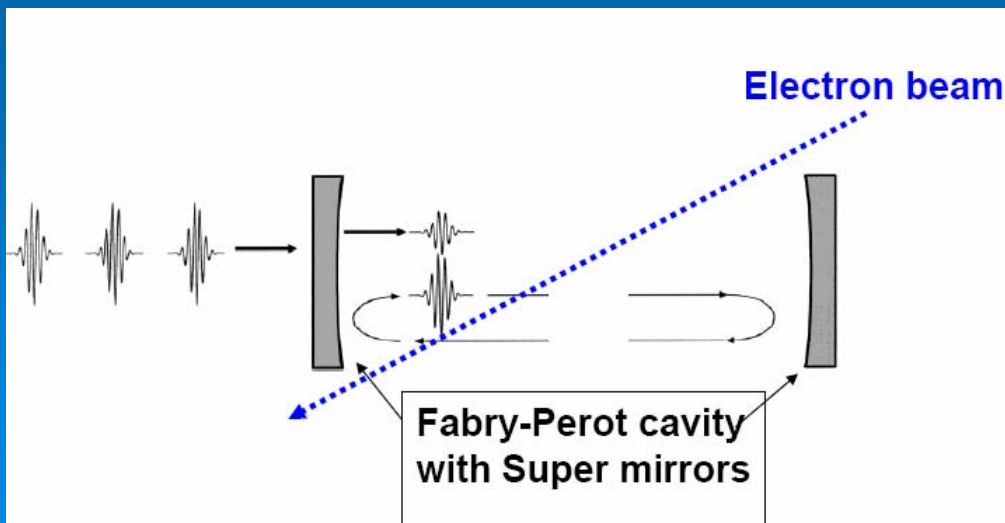
- Issues related to normal conducting linear colliders  
**G.Guignard Doc-05-14** CLIC/CTF
- Recent developments on SRF Techno in view of  
Snowmass **L.Lilje Doc-05-09** ILC
- New techniques of acceleration **B.Cros Doc-05-15**
- The Mini-Workshop on **WIGGLer** optimization for Emittance  
control **M.E. Biagini Doc-05-12** ILC+Light sources
- On **GDE**:
  - ATF2 - Overview K. Yokoya
  - European Issues B. Foster
  - American Issues G. Dugan
- 3 Parallel sessions on **BDYN+INSTR** and on **SCRF**  
+ 2 interface sessions (EUROTEV+ILC-BDIR)

# Polarized $e^+/e^-$ source based on Compton back scattering

ATF proof-of-principle experiment  
produced  $\sim 10^4$  pol.  $e^+$  per pulse  
 **$e^+$  generation decoupled from collider**

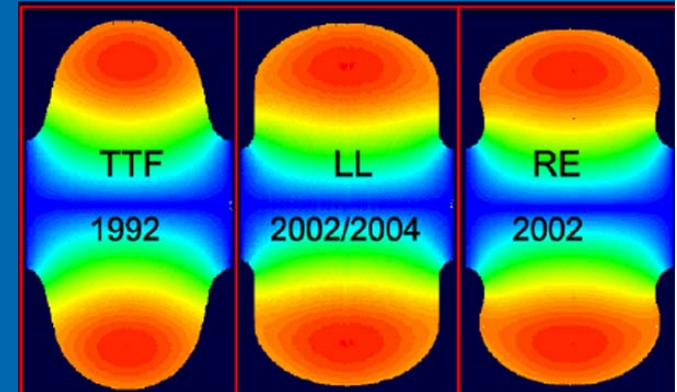
T. Omori, J. Urakawa, **KEK**  
K. Moenig, A. Variola, F. Zomer, **LAL**  
S. Guiducci, P. Raimondi **Frascati**  
Frank Zimmermann, **CERN LP05**  
et al.

**Doc-05-06 Doc-05-07**



# Cavity shape/material/processing

- Summary Talk London (L. Lilje)



[https://ilcsupport.desy.de/cdsagenda/askArchive.php?base=agenda&categ=a0522&id=a0522s53t3/transparencies/Summary of SRF WG LL .pdf](https://ilcsupport.desy.de/cdsagenda/askArchive.php?base=agenda&categ=a0522&id=a0522s53t3/transparencies/Summary%20of%20SRF%20WG%20LL.pdf)

- BCD Proposal for Cavity preparation (L.L.)

[http://alcpq2005.colorado.edu:8080/alcpq2005/program/accelerator/WG5/helen\\_edwards20050821164419.ppt](http://alcpq2005.colorado.edu:8080/alcpq2005/program/accelerator/WG5/helen_edwards20050821164419.ppt)

- BCD Proposal for Cavity preparation (L.L.)

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- Highlight talk by B. Visentin at this meeting



# HEEAUP 2005 Paris

9

A corner stone: the laser

Promise by G. Mourou of a fiber-based laser  
(CPA or CWDMA)

1000 fibers

|                |                                       |
|----------------|---------------------------------------|
| Energy         | $1\text{J} = 1000 \times 1\text{ mJ}$ |
| Pulse duration | 100-30 fs                             |
| Peak power     | 10-30 TW                              |
| Rep rate       | 15kHz                                 |
| Average power  | 15 kW (1J x 15 kHz)                   |
| Efficiency     | 30% (AC - light)                      |

Today  $1\text{J} \times 10\text{ Hz} = 10\text{ W}$

increase by 1500 !!

Start prototyping !

# **EuroLEAP** Objectives

**Coordinator B. Cros (LPGP/Orsay)**

- **To build a laser-plasma accelerator**
- **To accelerate electrons to the GeV energy range in a plasma wave.**
- **To test the issues related to the control of the properties of the electron beam**
- **Expected result: accelerated e-beam with**
  - **energy in the GeV range,**
  - **energy spread of the order of 1%,**
  - **pulse duration of the order of 100 fs,**
  - **charge in the range 10 pC to 100 pC.**

September 6<sup>th</sup>

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# 15 Workshops Supported by ELAN in 2005

| 2005  |                         |  |
|---|-------------------------|--|
| <u>WIGGLE2005</u> - Mini-Workshop on Wiggler Optimization for Emittance Control                                 | 21 - 22 February        | Frascati, Italy                        |
| <u>Metrology and Stabilisation</u> - for Linear Colliders Workshop  | 10 - 11 March           | LAPP, Annecy le Vieux, France          |
| <u>LCWS05</u> - International Linear Collider Workshop  | 18 - 22 March           | Stanford, USA                          |
| <u>TESLA Collaboration Meeting</u>  | March 30 - April 1      | Desy, Germany                          |
| <u>Positron Sources for International Linear Collider</u>   | 11 - 13 April           | Daresbury, UK                          |
| <u>HEEAUP2005</u> - International Workshop on High Energy Electron Acceleration Using Plasmas 2005              | 8 - 10 June             | Institut Henri Poincaré, Paris, France |
| <u>ILC-BDIR</u> London Beam Delivery Systems  | 20 - 23 June            | London, UK                             |
| <u>SRF2005</u> 12 <sup>th</sup> International workshop on RF Superconductivity                                  | 10 - 15 July            | Cornell University, US                 |
| <u>The 2005 International Linear Collider Physics and Detector Workshop and Second ILC Accelerator Workshop</u> | 14 - 27 August          | Snowmass, Colorado, USA                |
| <u>SPIE 2005</u> Photonics Application in Industry and Research iV  | 30 August - 2 September | Warsaw, Poland                         |
| <u>Meeting of European Global Design Effort</u>   | October 25, 2005        | Oxford, UK                             |
| <u>European SCRF Forum - Foundation Assembly</u>  | October 27, 2005        | DESY in Hamburg, Germany               |
| <u>TESLA Technology Collaboration Meeting</u>   | 5 - 7 December 2005     | Frascati, Italy                        |
| <u>GDE Meeting</u>  | 7 - 9 December 2005     | Frascati, Italy                        |
| <u>CTF Collaboration Meeting</u>  | 29 Nov-1st December     | CERN                                   |

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# Outreach and Tutorials supported ELAN

- **Snowmass** SRF Cavity tu

<http://alcpq2005.colorado.edu:8080/alcpq2005/proc>

- Srf Tutorials at SRF 2005

Workshop WWW-Link: <http://www.lns.cornell.edu/public/SRF2005/pro>

Tutorial session on Sunday

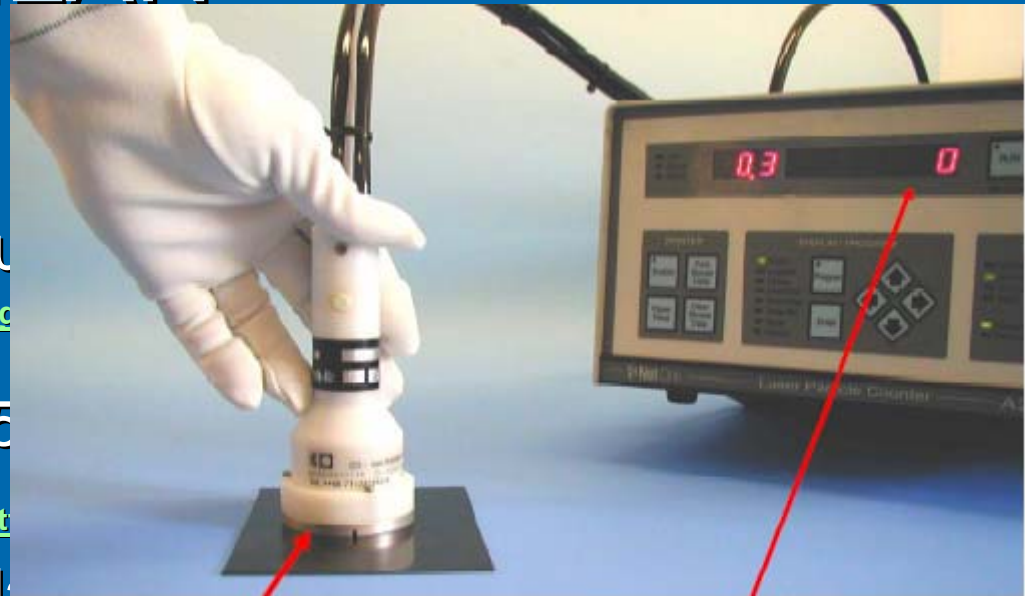
<http://www.lns.cornell.edu/public/SRF2005/pro>

Especially talk by D. Reschke on cleaning (supp.

ELAN): [http://www.lns.cornell.edu/public/SRF2005/talks/sunday/SuP03\\_talk\\_srf2005.pdf](http://www.lns.cornell.edu/public/SRF2005/talks/sunday/SuP03_talk_srf2005.pdf)

- Outreach presentation at the EGDE meeting in **Oxford**

[http://www.linearcollider.org/files/egde\\_talks\\_25102005/OxfordGDEcom\\_Royole.ppt](http://www.linearcollider.org/files/egde_talks_25102005/OxfordGDEcom_Royole.ppt)



Samplehead

Particlecounter

# Future Conferences

- ✓ **Podium Discussion “Galaxies, Quarks and the Shareholder Value”**

(discussion on benefits of basic research with large facilities)

- **Talks + discussion ~3 hours**

- **public: science, politics, media**

- ✓ **Exhibition: “How Europe Joins Forces to Understand Nature”**

- **7 days**

- **ILC, XFEL, LHC posters**

 **ESOF2006.ORG**  
EUROSCIENCE OPEN FORUM

# New associates

- - **SLAC** (M. Ross)
- **Technion** (S. Tarem)
- **Center for the Advancement of Natural Discoveries using Light Emission,**  
Yerevan , Armenia
- **Cracow University of Technology,**  
(Institute of Applied Mechanics), Krakow,  
Poland

# Plans for 2006

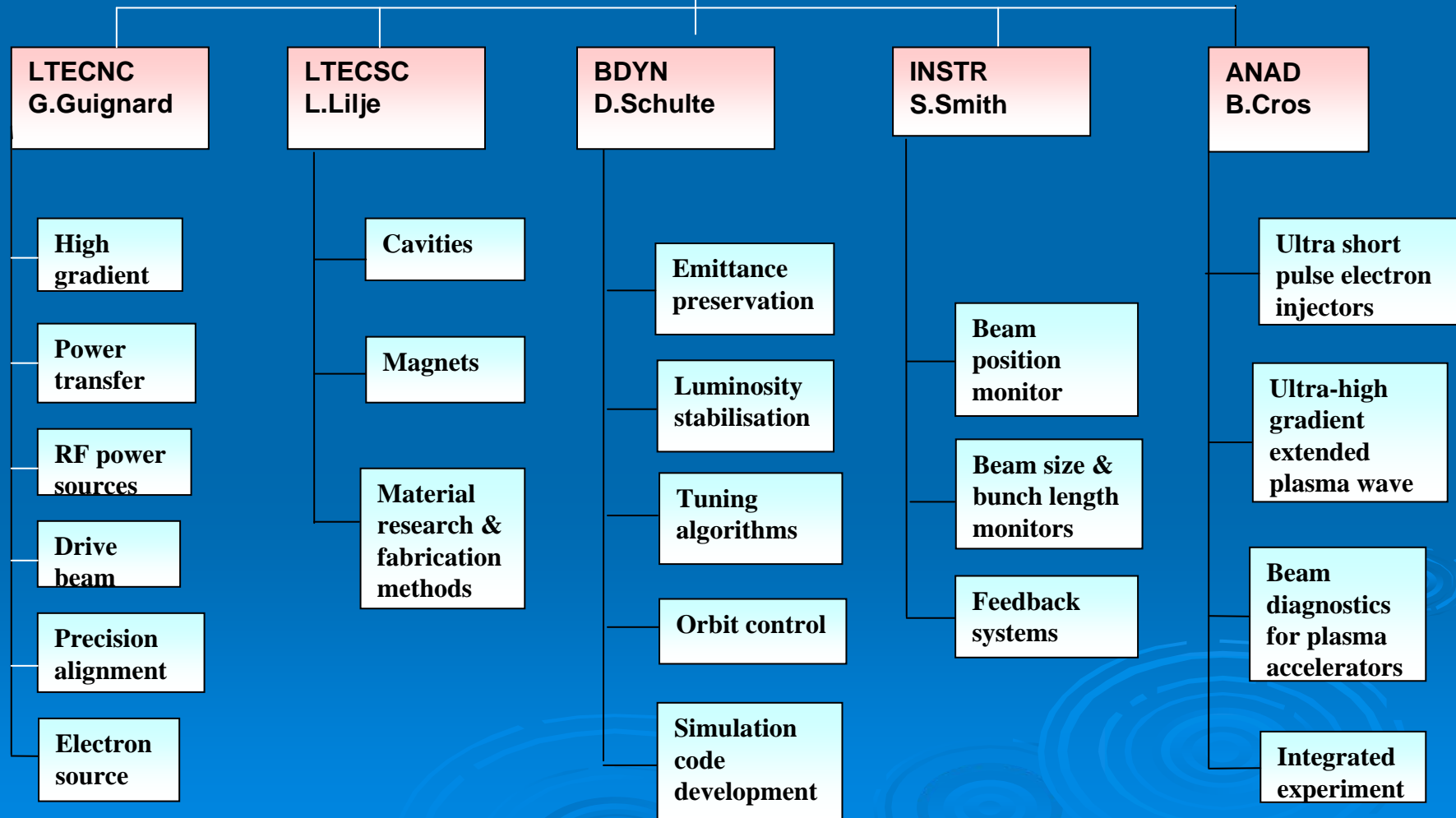
- Follow up on the GDE effort
- Bridge the CLIC/CTF and the ILC activities (e.g. beam dynamics, alignment, feedback)
- Prepare for a workshop similar to the London meeting
- Plan for the future of Linac activities within FP7 (started at EGDE in Oxford)
- Help in starting EUROLEAP
- Encourage/participate to outreach, industrial forums
- This program will require large financial effort. Contrary to y2004, travel money is already exhausted in several large labs

# Conclusions

- Very active year for ELAN on the 3 programs: ILC, CLIC, new techniques of acceleration
- Our policy has been to support/participate many relevant workshop with one major meeting directly organized by ELAN
- Money will be tight in 2006
- The 2010 horizon for ILC (recognized by ESFRI as a “global project” together with ITER) requires a strategy post CARE/EUROTEV within FP7
- We are very grateful for the EU **flexible support** which, with the facilities at DESY and CERN, allows our region to remain very competitive

**Coordinator : F. Richard**  
**Deputy : D. Schulte**

**Steering Committee**



F. Richard LAL/Orsay

# Participation to ELAN

| Country        | Number of institutes | Number of persons |
|----------------|----------------------|-------------------|
| Finland        | 1                    | 3                 |
| France         | 8                    | 70                |
| Germany        | 12                   | 130               |
| Italy          | 5                    | 45                |
| Netherlands    | 2                    | 7                 |
| Poland         | 3                    | 20                |
| Portugal       | 1                    | 3                 |
| Spain          | 3                    | 9                 |
| Sweden         | 1                    | 2                 |
| Switzerland    | 2                    | 3                 |
| United Kingdom | 15                   | 60                |
| CERN           | 1                    | 30                |

**Total Budget: 680 k€**

- 16 Contractors
- 26 Associates
- > 53 labs in total
- > 380 Physicists and Engineers

## Industrial Involvement:

| Country | Number of Companies |
|---------|---------------------|
| Germany | 4                   |
| Italy   | 1                   |
| UK      | 4                   |