

# Plan of

- What is ELAN
- What has been achieved so far
- Deliverables from ELAN WP in year 1
- What has changed since ELAN/CARE approval ?
- What are the plans
- Conclusions

# Main Objectives of ELAN

- **Coordination of R&D on electron accelerators at the European level. Evaluating the various technologies for improving the present infrastructures and defining a roadmap for future electron accelerators and colliders, including new techniques of acceleration.**
- **Broadening the participation of the various European countries to the worldwide effort and help in promoting new groups, new talents (European added value).**

# 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                |

•16 Contractors

•26 Associates

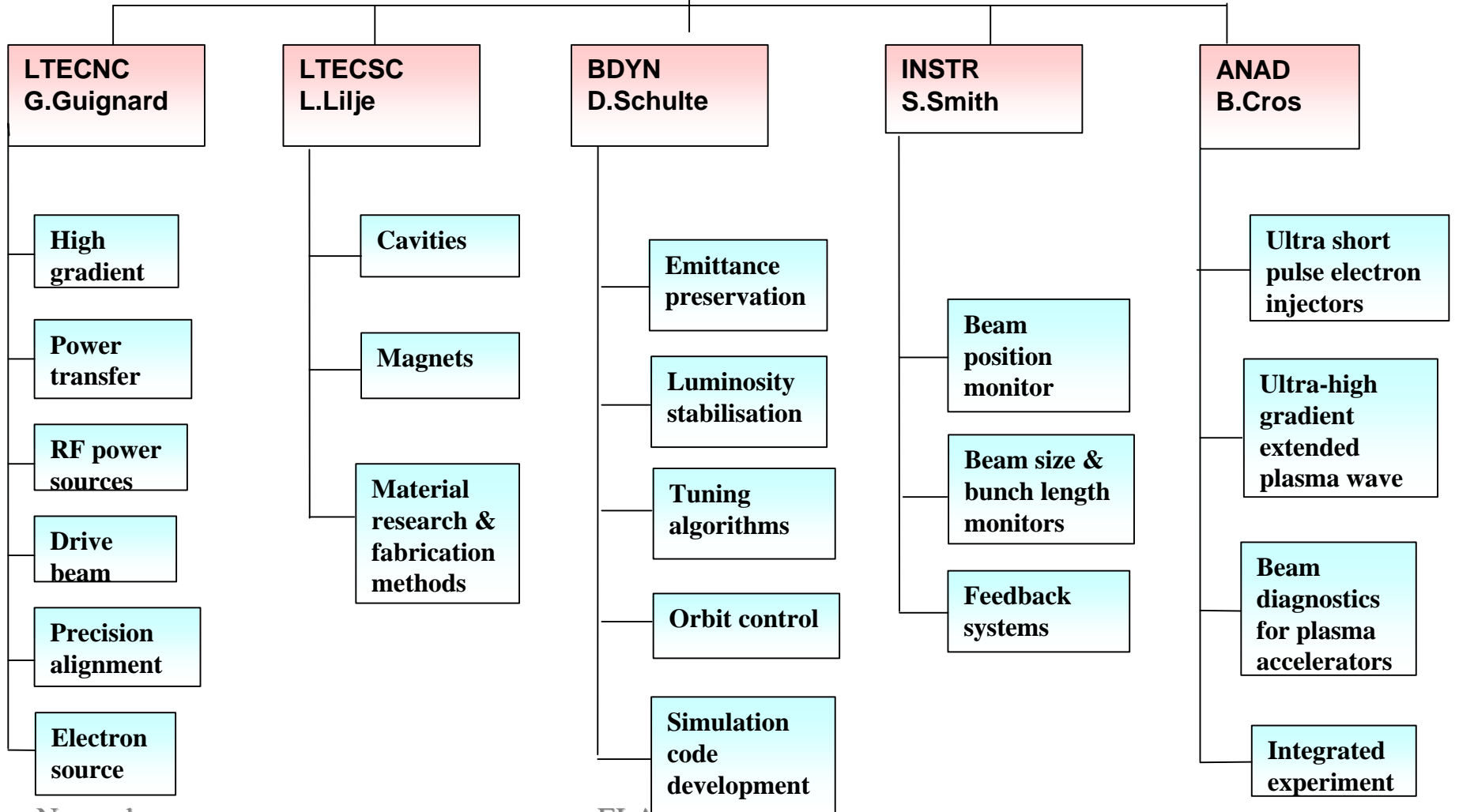
-> 53 labs in total

-> 380 Physicists and  
Engineers

**Total Budget: 680 k€**

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

**Steering Committee**

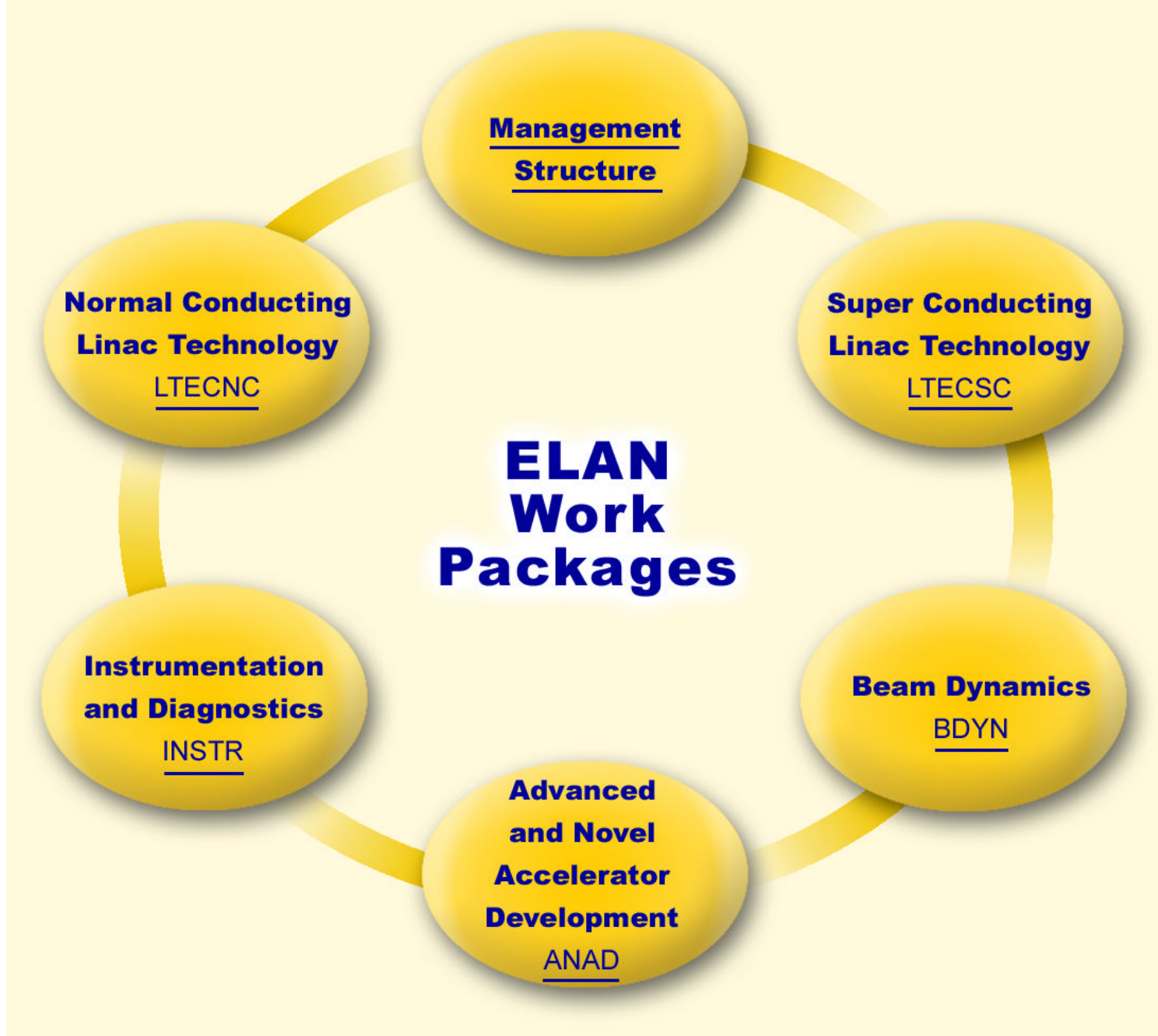


November  
2004

ELAN in 2004  
F. Richard

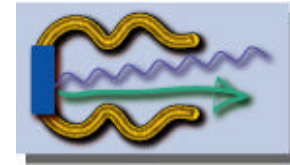
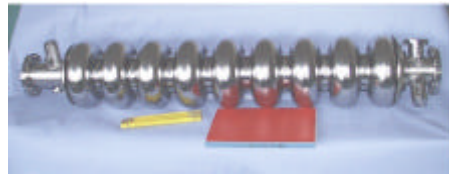
# What has been achieved so f

- Communication: mailing lists, discussion forum, contacts with labs
  - Continuous steering (~1 phone meeting/month)
  - **Frascati Workshop** in May 2004 with **80 participants**:
    - 16 plenary and 27 parallel talks available on the web
    - Common meetings at the level of WP and with PHIN and SRF
    - 15 **ELAN Documents**
    - 4 reports from WP conveners on the strategy
- ➔ All these documents promoted as **CARE Notes** after agreement with the chair of the **CARE Dissemination board**
- They are accessible from the ELAN web  
<http://esgard.lal.in2p3.fr/Project/Activities/Current/Networking/N2/ELAN/index.php>



# ELAN CONNECTIONS

- Connections between WP
- Connections to **JRA SRF** and **PHIN**



- Connections to the **DS EUROTeV**
- Connections to **facilities TTF CTF**
- Connections to future projects **ILC**

# ELAN CONNEXIONS

|              |                     |             |                |                            |
|--------------|---------------------|-------------|----------------|----------------------------|
| <b>ELAN</b>  | LINAC<br>Test Beams | CARE JRA    | WW<br>Collider | Laser/Plasma<br>Facilities |
| <b>WP</b>    | TTF<br>CTF          | SRF<br>PHIN | ILC            | ALPHA-X<br>LOA....         |
| <b>NC</b>    | X                   | X           | X              | X                          |
| <b>SC</b>    | X                   | X           | X              |                            |
| <b>BDYN</b>  | X                   | X           | X              | X                          |
| <b>INSTR</b> | X                   | X           | X              | X                          |
| <b>ANAD</b>  |                     | X           |                | X                          |

| ELAN Activity           | Jan     | Feb       | Mar | Apr      | May | Jun       | Jul     | Aug      | Sep   | Oct   | Nov     | Dec  |
|-------------------------|---------|-----------|-----|----------|-----|-----------|---------|----------|-------|-------|---------|------|
| Steering                |         | SC        | SC  | SC       | SC  | SC        |         |          | SC    | SC    |         |      |
| WP1 NC                  |         |           |     |          | F   |           |         |          |       |       | D       |      |
| WP2 SC                  |         |           |     |          | R   |           |         |          | ANL   |       | E       |      |
| WP3 BDYN                |         |           |     |          | A   |           |         |          |       |       | S       |      |
| WP4 INSTR               |         |           |     |          | S   |           |         |          |       |       | Y       |      |
| WP5 ANAD                |         |           |     |          | C   |           |         | Paris    |       | Paris |         |      |
| Joint meeting with CARE |         | SC Paris  |     | PHIN SRF | A   | SC Warzaw |         |          |       |       |         |      |
| Others                  |         |           |     |          | T   |           |         |          |       |       |         |      |
| EUROTeV                 |         | Daresbury |     |          | I   |           |         |          | CERN  |       | DESY    |      |
| TTF                     | Zeuthen |           |     | DESY     |     |           |         |          | Orsay |       |         | DESY |
| CTF                     |         |           |     |          |     |           |         |          |       |       | CERN    |      |
| Conferences Workshops   |         |           |     |          |     |           | EPAC 04 | LINAC 04 |       |       | ILC KeK |      |

# Deliverables f

- Common Deliverables (already discussed)
  - Annual meeting in Frascati
  - Web sites with relevant links and documentation
  - Summary reports from Frascati indicating the work plans and priorities
- Support for EUROTeV from WP1,3,4
- ➔ ELAN belongs to the SC of EUROTeV
- Documented repository of codes which will be used for simulations from BDYN

<http://hepwww.ph.qmul.ac.uk/~white/accodes/>

# Deliverables f

- Synergies

NC CTF-ILC for Damping Rings

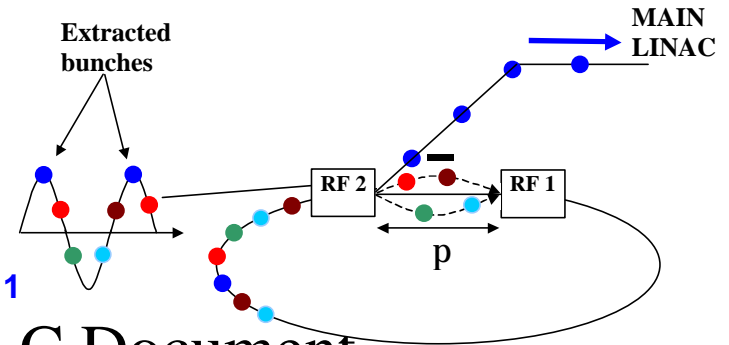
CARE/ELAN document-2004-011

Stabilisation/alignment CLIC-ILC Document

CARE/ELAN document-2004-005

BDYN codes relevant to all WP (including ANAD)

INSTR common to all technologies



- Underway

NC will participate in the CTF meeting in November

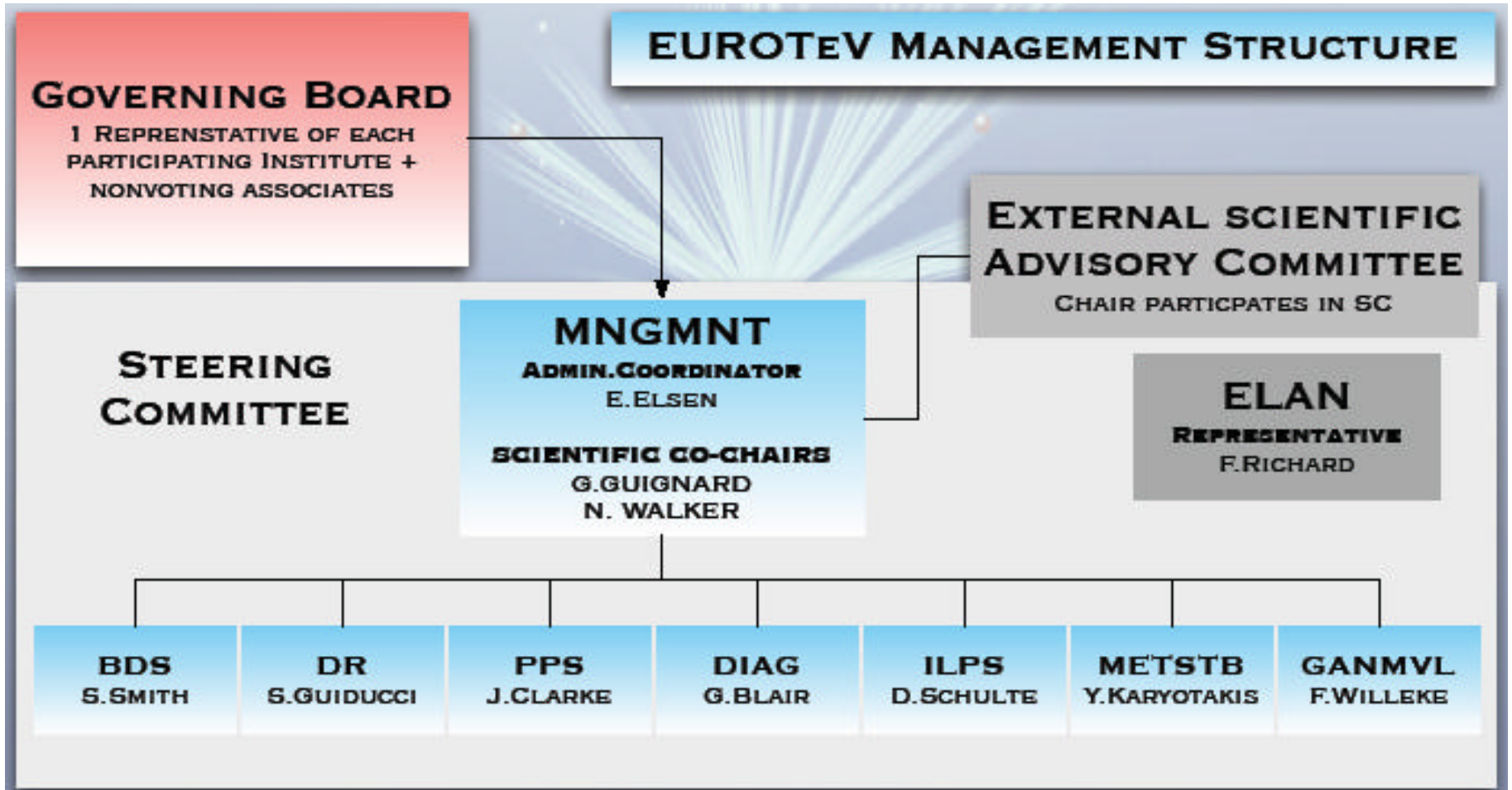
➔ Proceedings

ANAD will produce proceedings+documents after the DESY meeting

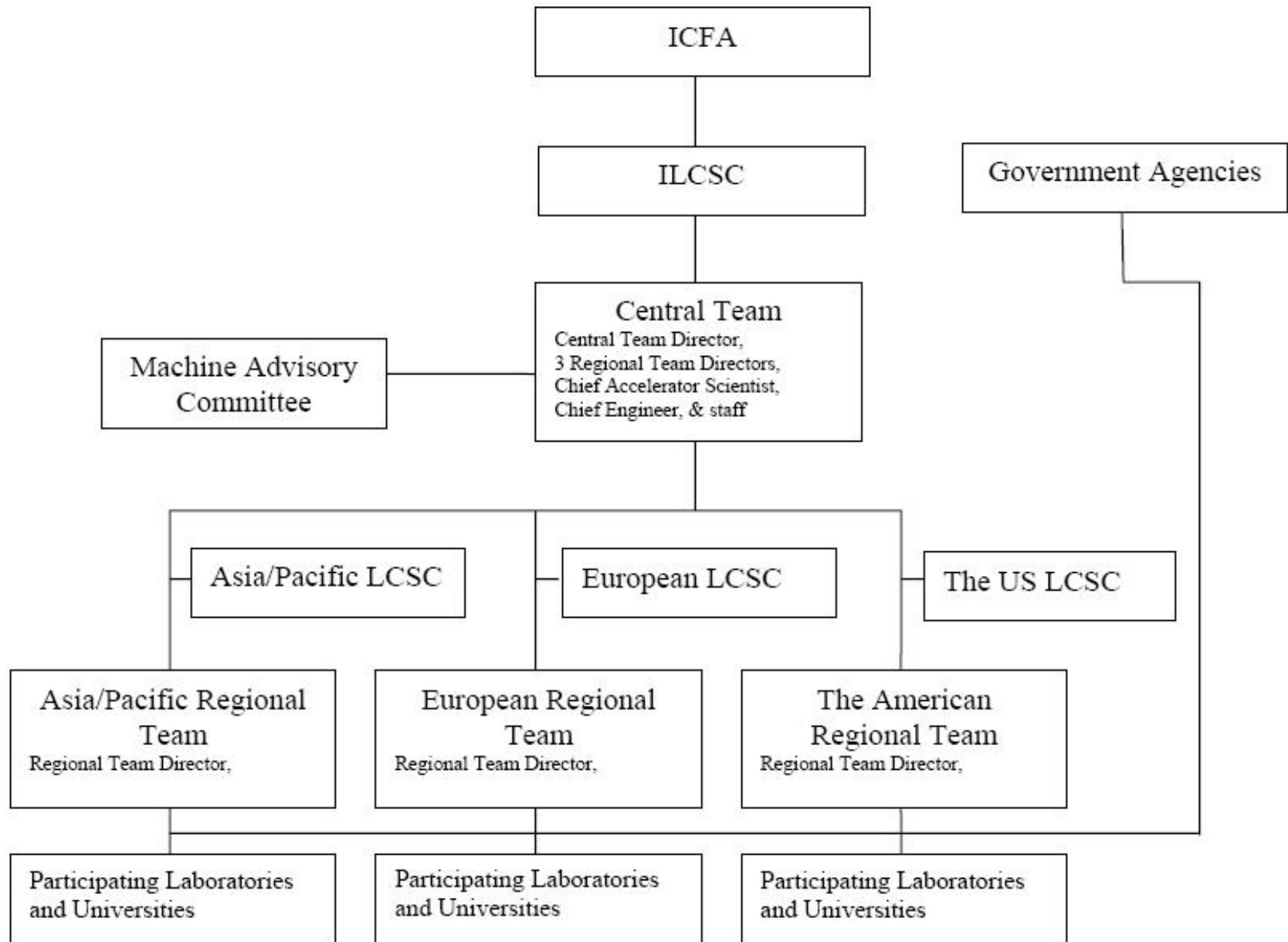
# What has changed since ELAN/CARE approval ?



- EUROTeV approval
- ➔ Complementarities with ELAN to be continued/optimised
- Choice of SC technology for ILC in August 2004
- ➔ ELAN involved in 'rethinking' the European strategy in view of ILC
- Recent progress in new techniques for acceleration



# The Global Design Initiative for ILC



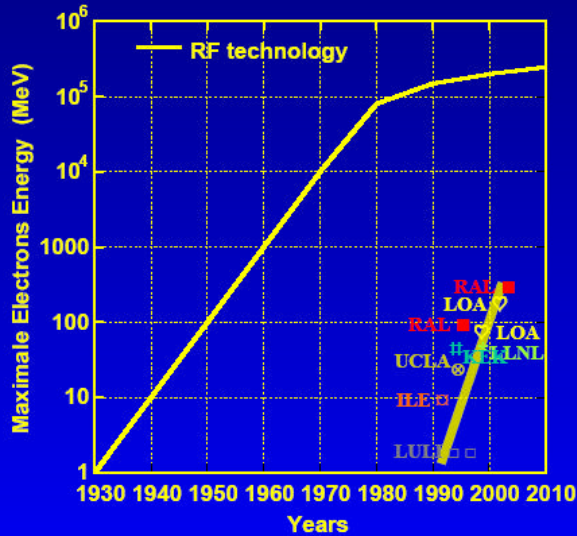


# Impact of

KEK (Japan) has decided to host the "First ILC Workshop", under the auspices of ICFA and ILCSC. The goal of this Workshop is to facilitate the **world-wide formation of an international design team of a linear collider**. This Workshop is expected to create an expert-oriented opportunity for in-depth and comprehensive discussions on design and development issues of a linear collider, which is to be based on the **advanced superconducting RF technologies** deployed in the main linacs. Workshop dates November 13th through 15th, 2004.

- ➔ Meeting organized within ELAN to collect the relevant European inputs (CARE, EUROTeV, TTTF/XFEL) + extra inputs from countries for the KeK WS
- ➔ Discussion within ELAN on how to boost the European impact on ILC and on possible changes in the organisation of our work

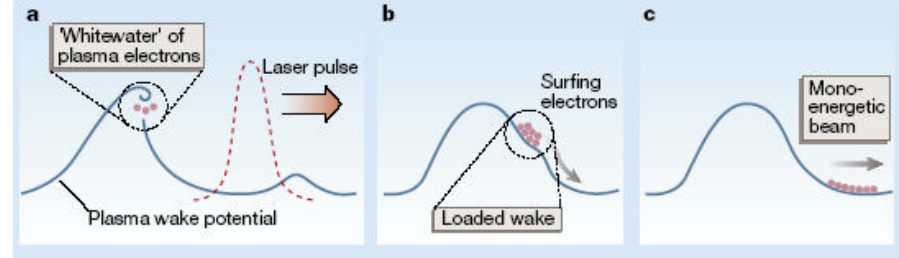
# Relevance of laser plasma approach for high energy physics > TeV



Define in collaboration with high energy physicists the requirement for their experiments (particles, charge, stability current, luminance, reproducibility).

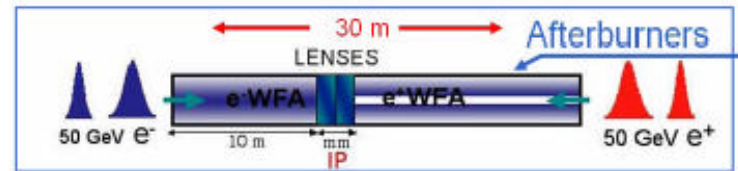
Define schemes, cost and compare to conventional approach (present and expected)

Single stage or multi stage?  
Laser or e-beam ?



Nature 30 September 2004

~ monoenergetic beam



Plasma wakefield induced by a low energy electron beam

Fast progress on GRADIENTS

Still a lot to improve on repetition rate (> kHz needed) for LUMINOSITY



True also in overall energy conversion efficiency

CARE/ELAN document-2004-002 Electrons beam produced by ultra short laser pulses in the relativistic regime

V. Malka, J.Faure, Y.Glinnec, J.J. dos Santos, T. Hosoka

Interesting possibilities using beam+plasma ('After burner' from SLAC)

# What are our Plans

- Two meetings /year in coordination with SRF/PHIN and EUROTeV + dedicated workshops with a few participants
- The timing of these meetings and their connections have to be optimised with our partners
- Extend our collaboration with non Europeans (US labs and Asian labs could become ELAN associates)
- Investigate new EU opportunities for ANAD and CLIC

# Conclusions

- The R&D fields covered by ELAN are moving fast and we need to adapt our organisation (format of meetings) and even reconsider our strategy
- There is a well understood and useful connection between ELAN and the JRA
- ELAN has been able to fulfil its commitments except for the WP INSTR (S. Smith replaced by G. Blair)
- There is complementarity with EUROTeV which calls for an optimal use of resources avoiding duplication of efforts
- ELAN will enthusiastically participate to the ILC effort

# Role of

- ELAN will not commit FTE (including for writing a TDR) or non-travel money
- ELAN can provide:
  - a forum for new ideas, new groups
  - a structure to organize (or co-organize) specialized WS, tasks forces (WP, JRA, TTF, EUROTeV, ILC, ANAD...)
  - international connections (associated labs)
  - communication tools e.g. Publications, documented DB for codes