WP 3: Dissemination and Outreach

Barbara Warmbein

ILC Communicator (Europe)

WP3: who is it?

- WP Participants: DESY, CNRS, INFN, Oxford

- WP 'Executives': European ILC Communicators
  - **Perrine Royole-Degieux (CNRS/IN2P3)**
  - **Barbara Warmbein (DESY)**

ILC European communications activities

… in the larger framework of global communications

The global team

- 2 European communicators
- 1 Asian communicator (KEK)

Rika Takahashi

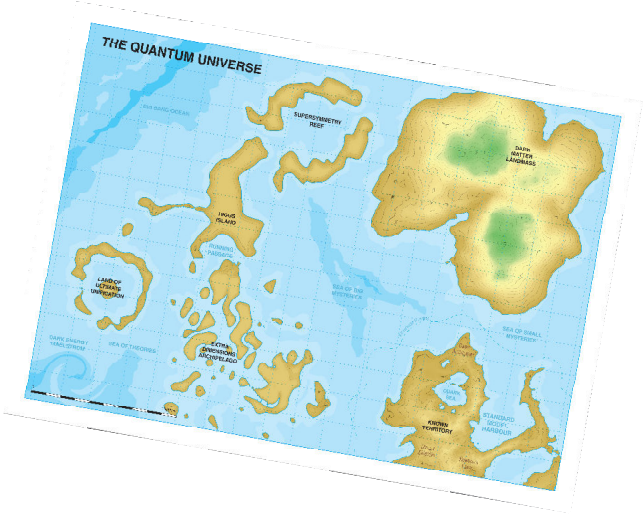
- ...and in 2009 a changing team. Original plan: one communicator per region.

‘European’ plan

- **Strategy**:
  - strengthen ILC collaboration : speak in one voice and unite the scientific community
  - build support in European governments and funding agencies
- **Specific messages**:
  - Europe plays a major role in the ILC and holds much expertise
  - Europe is a possible site
  - To keep leadership, Europe needs to commit to ILC
  - ILC European researchers are connected to LHC, XFEL, CLIC
  - LHC results must be complemented by a linear collider

Global tools

- www.linearcollider.org (recently relaunched)
- ILC NewsLine
- Companion document to the ILC RDR “Gateway to the Quantum Universe”
- ILC brochure, press kit
- Presence at large international meetings
- Technology Transfer brochure (plus translations)
- ILC bloggers (two Europeans)
- Public talks at conferences
- plans for new projects



www.linearcollider.org

All about the ILC:

- What is the ILC?
- Why do we need the ILC?
- The people
- Press
- Publications

Quick links

- Calendar
- Glossary
- Images
- Jobs

All about the ILC

Welcome to the International Linear Collider! This project – we call it ILC for short – could be the next big adventure in particle physics. Currently at the planning stage, it would complement the Large Hadron Collider at CERN and shed more light on the discoveries scientists are likely to make there in the coming years. Find out more in this section about the machine, its status and the people who are working on it.

In this section

What is the ILC?
The complete International Linear Collider fact sheet

Why do we need the ILC?
Possible benefits from planning and building the ILC

The people
Who are the people planning, designing and funding the ILC

Press
Contact information and material for the press

Publications
Brochures, reports and newsletters to read, download or order in print

Any questions?

Search the glossary

Ask a scientist

ILC NewsLine

NewsLine

The ILC's weekly newsletter

Subscribe to *ILC NewsLine*

Would you like to keep informed about news from the ILC? Subscribe to *ILC NewsLine*!

Gateway to the Quantum Universe - website

Global Design Effort:

- Organisation
- Contacts and photos
- Meetings
- Director's Corner
- Director's updates
- Project Managers
- LC Accelerator school
- Selected talks
- Project tools hub

Quick links

- Calendar
- Glossary
- Images
- Jobs

ILC Global Design Effort (GDE)

An international team headed by Barry Barish leads the Global Design Effort for the proposed International Linear Collider ILC. Planning, designing and funding the ambitious electron-positron collider project will require global participation and global organisation. The GDE team sets the strategy and priorities for the work of hundreds of scientists and engineers at universities and laboratories around the world. Their goal: produce an ILC *Technical Design Report* by the end of 2012 which will be used to decide the future of the project.

Mission

The mission of the GDE is to produce a design for the ILC that includes a detailed concept for the particle accelerator, performance assessments, reliable international costing, an industrialisation plan, siting analysis and governance proposal.
The organisation coordinates worldwide R&D efforts according to well-defined priorities to demonstrate and improve the performance of the ILC machine components, reduce the costs and attain the required reliability.

In this section

These more technical pages are the main source of information for the members of the Global Design Effort. They include contact information, project reports, updates and much more.

Organisation
Organisation chart for the GDE

Contacts and photos
Browse the GDE members directory

Meetings
A list of upcoming ILC meetings

Director's Corner
Articles from the GDE Director, Barry Barish

GDE Directorate

Barry Barish
GDE Director
Announcement
Director's Corner
Director's Updates

Michael Harrison
Regional Director
Americas
Announcement

Kaoru Yokoya
Regional Director
Asia
Announcement

Brian Foster
Regional Director
Europe
Announcement

ILC NewsLine

NewsLine

The ILC's weekly newsletter

Subscribe to *ILC NewsLine*

ILC NewsLine in 2009

Director's Corner

Trains, planes and automobiles – the life of a regional director

Today's issue features a Director's Corner from Brian Foster, GDE European Regional Director.

Group photo at CIEMAT in Spain

Although 2009 is not yet two months old, I seem to have already fitted in enough trips to fill a year – but such is the life of an ILC Director. My first trip of the year was to Paris. On 6 January I travelled to the headquarters of the *Institut National de Physique Nucléaire et de Physique des Particules* – more concisely known as CNRS/IN2P3 – to meet with the Director, Michel Spiro, the Deputy Director for particle physics, Etienne Augé and Guy Wormser, Director of LAL, Orsay. Our discussions were wide-ranging, centering on the prospects for the ILC in France as well as developments on the wider stage. In France itself, the advent of

Image of the Week

Prize for ILC poster

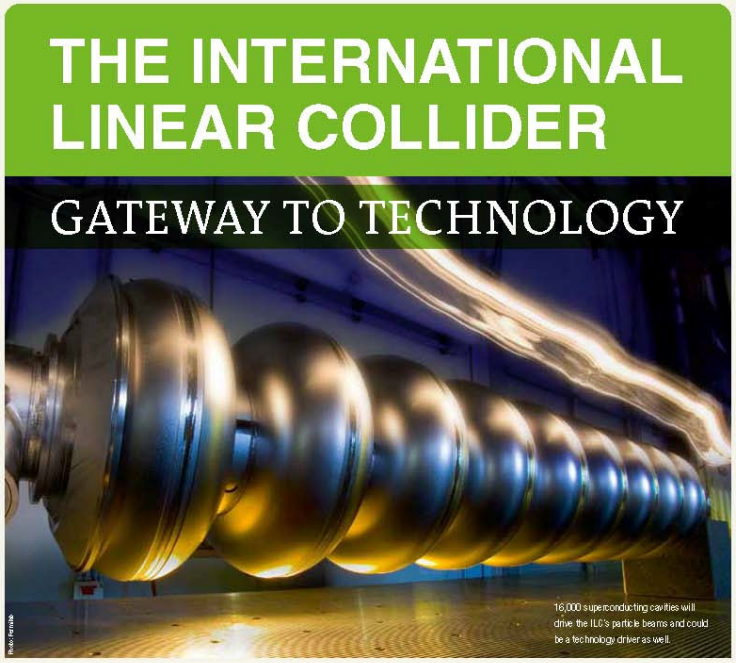
During last week's Lepton Photon conference in Hamburg, a poster presented by Sebastian Aderhold from DESY won one of the three prizes awarded by the Association of the Friends and Sponsors of DESY. A total of 73 posters were on show, and Sebastian's on "High-Gradient SRF Research at DESY" won in the category "Experimental Methods and Projects". See the website for the other winning posters.

- **2,188** subscribers (2090 last year) – **150** articles per year (including Barry's corners)
- Some 590 subscribers from Europe
- **31** articles this year written by Barbara, Perrine or Brian
- **8** LHC-related articles or images
- **23** articles or images about FLASH & XFEL and CLIC

The first public talk

- 1 October 2009: Jim Brau in Albuquerque
- Advertising in local papers with the help of local press office and in online calendars and on club websites - good model to follow
- More than 100 people in the room

‘TT Brochure’



THE INTERNATIONAL LINEAR COLLIDER

GATEWAY TO TECHNOLOGY

16,000 superconducting cavities will drive the ILC's particle beams and could be a technology driver as well.

Humankind has always been driven by the desire to understand the world in which we live. The tools invented by scientists to gain this understanding in turn yield applications that benefit all of society and play a major role in the global economy.

Particle physics has been the source of many innovations not originally part of the quest for understanding the Universe. Many of these – medical diagnostics and therapy and the World-Wide Web are two striking examples – have changed the way we live and do business. Particle physicists continue their quest, and history tells us that the tools of the future should be the source of yet more technological breakthroughs, driving progress in industry and securing the workforce of the future. One of these tools is the proposed particle accelerator, the International Linear Collider or ILC.

Using unprecedented technology, the 31-kilometre-long ILC will hurl electrons and their anti-particles, positrons, toward each other at nearly the speed of light to collide 14,000 times every second at energies of 500 billion electron-volts. With the ILC, discoveries are within reach that could stretch our imagination with new forms of matter, new forces of nature, new dimensions of space and time and bring into focus Albert Einstein's vision of an ultimate unified theory.

Fundamental research is not done with the aim to make computers even faster, chips even smaller or medicine even better. We cannot be sure where the research into the nature's most fundamental constituents will take us, and likewise cannot be sure what beneficial innovations will emerge. However, the track record makes us confident that technological advances will occur, in one form or another.

“ILC scientists around the world are studying ways to meet the challenges and industry is getting ready to produce high-tech components, some of which will find their way into everyday life.”

- Commissioned by FALC
- Based on a FALC report : *“Technology Benefits Deriving from the International Linear Collider”* linearcollider.org/TechnologyBenefits
- Printed in 2,000 copies
- translations exist into Japanese and Chinese; Korean to come
- Special area on new ILC website

Medicine

Computer-tomography scan of a human head.

Positron emission tomography (PET), a product of physics research into antimatter, has become an essential medical diagnostics tool, allowing previously unattainable views of chemical processes within live organs. Proton therapy is a powerful new treatment method delivering a concentrated, targeted dose of protons or ions precisely to the site of a tumour. Those treatments, however, currently need heavy and costly equipment. The ILC's new superconducting RF accelerating technologies make it possible to downsize the equipment and reduce its power consumption. Radiation therapy could become more focused and thus less damaging to healthy tissue by synchronising to the patient's breathing cycle. The superconducting technology could be adapted to produce monochromatic X-rays for medical diagnoses and treatment, enabling radically new probes of biological processes and tissue protein structure, and help develop new medicines.

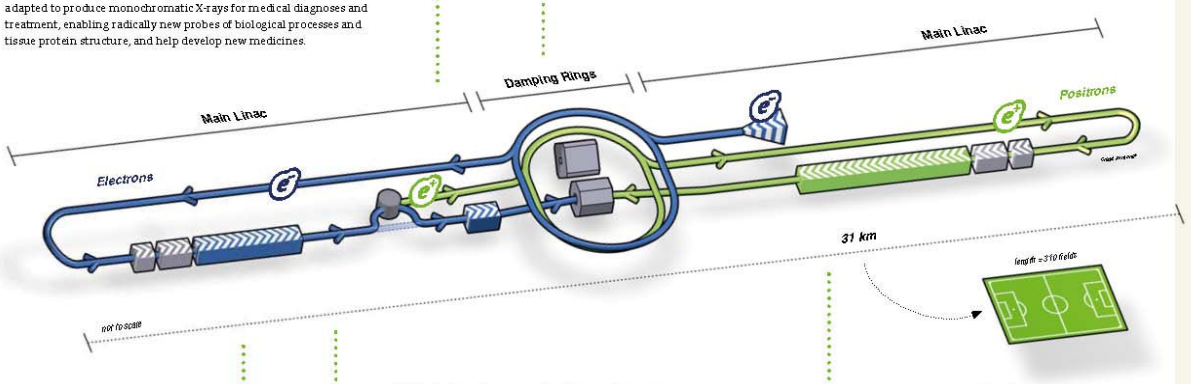
Computing

View of a particle physics computing centre.

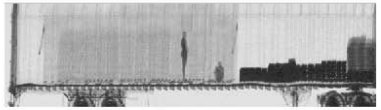
The data transfer rates from experiments like those at the ILC and the Large Hadron Collider, particle physics' current big adventure, are enormous – comparable to those for all the world's telecommunications put together. The latest computer and communications technologies and the advanced Grid data flow management software developed by particle physicists is essential to cope with the demands, but these now extend more broadly. The MammoGrid database developed in European laboratories distributes mammogram information among participating doctors and hospitals. A repository with 30,000 mammograms is now accessible, helping save lives.

POSSIBLE BENEFITS FROM ILC TECHNOLOGY

Challenging technologies are required for the International Linear Collider. Superconducting radio frequency (SCRF) cavities like the one shown on the front page will be used to accelerate particles to high energies. Unprecedented detector technologies will record the particles from the collisions. The whole ILC project is a challenge in terms of super-efficient particle acceleration, squeezing beam sizes to the nanometre scale and tracking particles to unprecedented precision. ILC scientists around the world are studying ways to meet these challenges and industry is getting ready to produce high-tech components, some of which will find their way into everyday life.



Tools for the future



Gamma-ray image of a cargo container.

The challenges of a new science project can greatly enhance many different industrial processes, thus driving technological development and the economy. For example, the tiny particle beams of the ILC need constant monitoring and fast, precise corrections. Tools developed for this purpose will help design very highly integrated electron circuit fabrication methods, which will be a major boost to many industrial processes and products at the nanometre scale. PCs could become more compact and lightweight thanks to improved technologies for electron beam lithography. Techniques originally used to give the accelerator's cavities their exquisite polish could lead to cheaper, better understood technologies for the metals industry. The expertise gained in producing 16,000 superconducting cavities and all the parts that drive them is likely to enhance superconducting applications in general. The electron sources developed for the ILC could enable new electron microscopes that would revolutionise the magnetic disk industry. Even customs officers' daily work may benefit from particle physics: with the help of detector technologies developed for particle collisions, cargo containers could be scrutinised very efficiently.

ILC Technology and other sciences

Protein structure imaged by X-ray scattering at a synchrotron accelerator.

Superconducting technology should advance work on Energy Recovery Linacs (ERLs), permitting substantial savings in size and cost. The ERLs will significantly expand the capabilities for studies in nuclear science, materials science, chemistry, structural biology and the environment. The first Free-Electron Lasers (FELs) now being built in the US, Japan and Germany are based directly upon linear collider research. Light sources have brought important advances within many sciences over the past few decades leading to many applications. For example, researchers at the Advanced Light Source in the US solved the structure of the avian flu virus and analysed its specificity to human receptors. The ILC technology can also be applied to the acceleration of protons and nuclei. Proton accelerators for intense spallation neutron sources provide a wide range of studies on biological properties. Numerous applications can also be found in material science, with direct implication on everyday life: medical implants, corrosion control, lighter airplanes and many more.

Environment

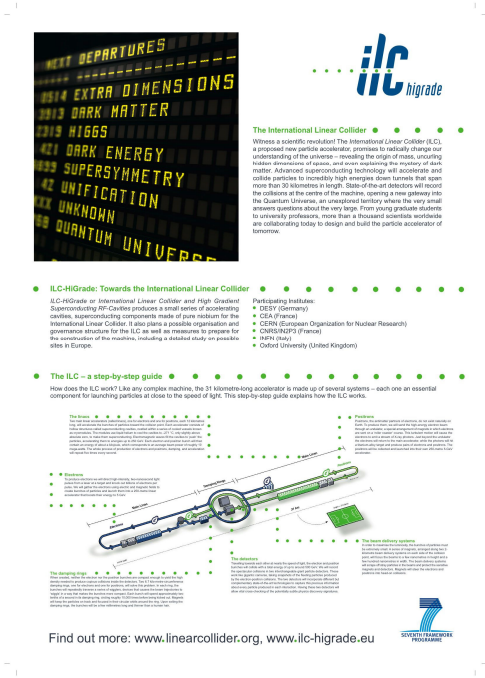
Superconducting technology could produce intense gamma rays to characterise the composition of nuclear waste. With this knowledge, high intensity neutron beams can be tailored to turn the waste into harmless stable nuclei. An Asian collaboration working in Japan is developing this potential. ILC radiofrequency power systems could enable remote chemical analyses of environmental hazards. Monitoring technologies for precise beam control could be used as a new early warning system for seismic activity.

European and HiGrade activities

- Deliverable 1: set up www.ilc-higrade.eu
- First press release
- HiGrade Poster

- Gateway to the quantum universe
  - **Translated into five languages (ru, sp, it, fr, ge)**
  - **Printed in EN and DE**
- Translations of other strategic ILC publications
- New global publication in 6 European languages

the Poster



- Presented in Versailles, France at the *Fifth European Conference on Research Infrastructures (ECRI08)*, submitted for ASEPS 2010
- An ILC short description + a HiGrade paragraph

ILC-HiGrade: Towards the International Linear Collider

ILC-HiGrade or *International Linear Collider and High Gradient Superconducting RF-Cavities* produces a small series of accelerating cavities, superconducting components made of pure niobium for the International Linear Collider. It also plans a possible organisation and governance structure for the ILC as well as measures to prepare for the construction of the machine, including a detailed study on possible sites in Europe.

Participating Institutes:

- DESY (Germany)
- CEA (France)
- CERN (European Organization for Nuclear Research)
- CNRS/IN2P3 (France)
- INFN (Italy)
- Oxford University (United Kingdom)

The ‘passports’

- Pdfs are ready
- On ILC website

Near future

-Write HiGrade annual report

-Find reliable translation procedures

-Maintain our established tools, translate and distribute them

-Design European-specific one-pagers

-‘Gateway to the Quantum Universe’ website in 6 languages (pending budget)

-ILC animation...

Sneak preview!