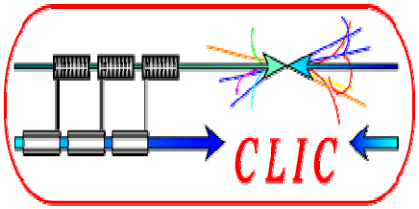
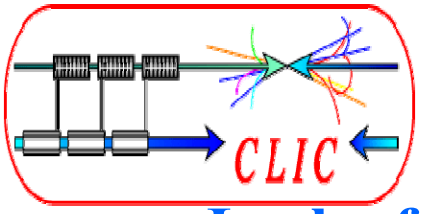


CLIC-ILC Collaboration?

- **Following visit of Barry @ CERN (Nov 07)**
  http://www.linearcollider.org/newsline/archive/2007/20071213.html

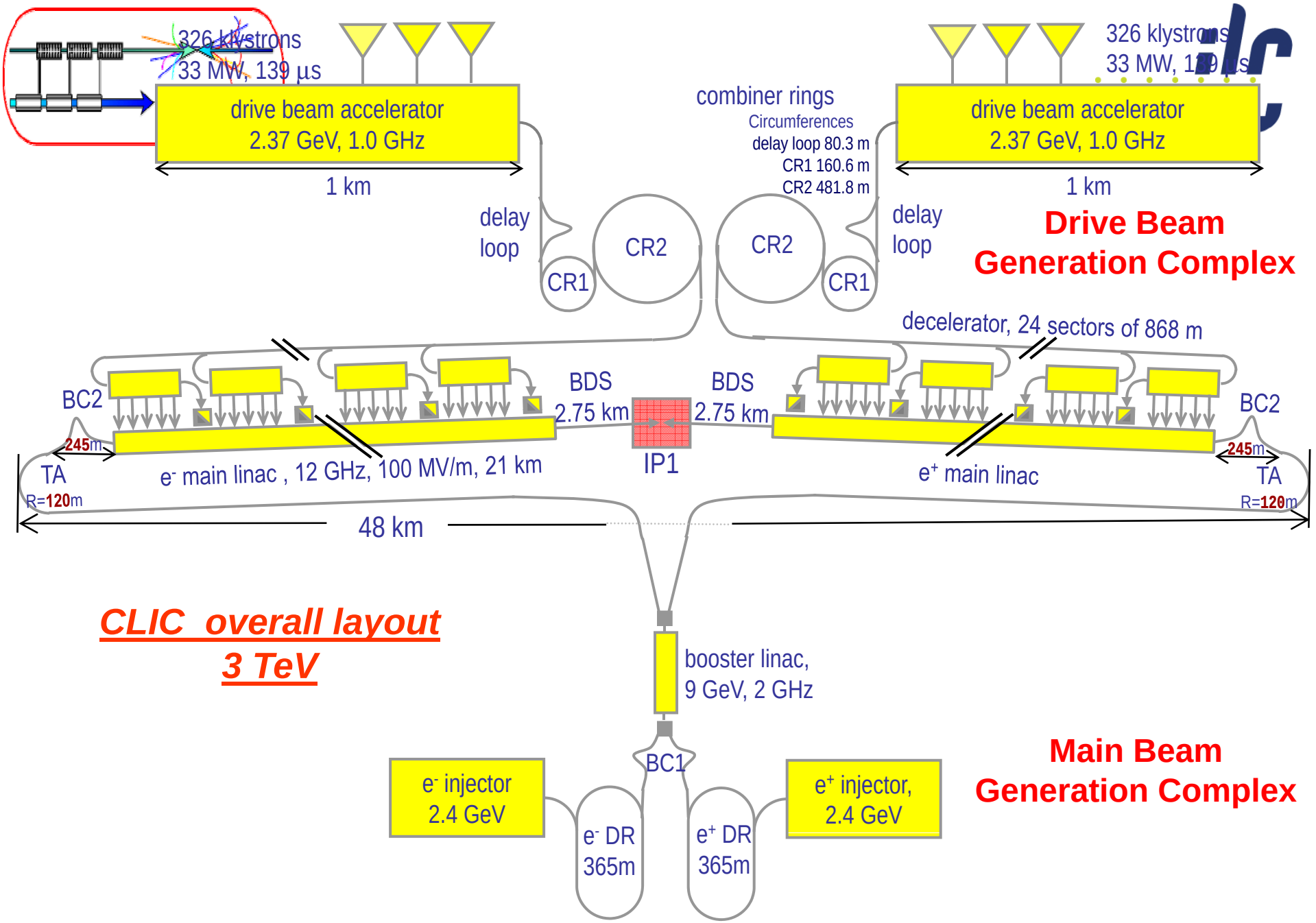
Independently of US/UK financial crisis,

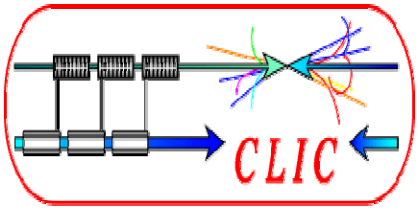
but even more desirable now



(My) motivations for CLIC/ILC collaboration

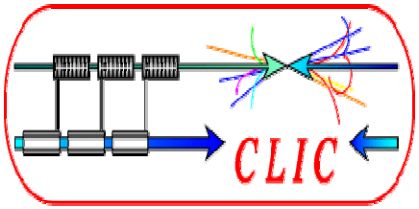
- **Lack of resources: (both CLIC and ILC)**
  - **Join resources where useful and avoid duplication**
- **Foster ideas and favor exchanges**
  - **Beneficial to both**
- **Aiming (as much as possible) on common system designs**
  - **similar energy; Ex: BDS, MDI, Detector, Cost….**
  - **Identify necessary differences due to technology and/or energy**
- **Avoid negative image of conflicting teams**
  - **Devastating for HEP**
- **Minimize contradicting presentations in 2010-12 (?):**
  - **Develop common knowledge of both designs and technologies on status, advantages, issues and prospects for the best use of future HEP**
  - **Common preparation of the (unavoidable) evaluation of technology**
  - **Avoid (another) evaluation by external (wise?) body. Better done by this community with technical expertise**
- **Even if ILC technology more mature, timescale not so ≠ :**
  - **Technical Design in 2010-2012 for ILC and 2014 for CLIC**


326 klystrons
33 MW, 139 µs
drive beam accelerator
2.37 GeV, 1.0 GHz
1 km
combiner rings
Circumferences
delay loop 80.3 m
CR1 160.6 m
CR2 481.8 m
delay loop
CR1
CR2
CR2
CR1
delay loop
326 klystrons
33 MW, 139 µs
drive beam accelerator
2.37 GeV, 1.0 GHz
1 km
Drive Beam Generation Complex
decelerator, 24 sectors of 868 m
BC2
245m
TA
R=120m
BDS
2.75 km
e- main linac , 12 GHz, 100 MV/m, 21 km
IP1
BDS
2.75 km
e+ main linac
BC2
245m
TA
R=120m
48 km
CLIC overall layout
3 TeV
booster linac,
9 GeV, 2 GHz
BC1
e- injector
2.4 GeV
e- DR
365m
e+ DR
365m
e+ injector,
2.4 GeV
Main Beam Generation Complex



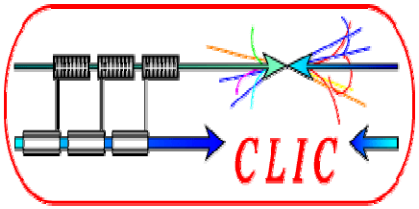
Subjects with strong synergy

1. **Civil Engineering and Conventional Facilities**
2. **Beam Delivery Systems & Machine Detectors Interface**
3. **Detectors**
4. **Cost and Schedule**
5. **Beam Dynamics & Beam Simulations including Low Emittance Transport**



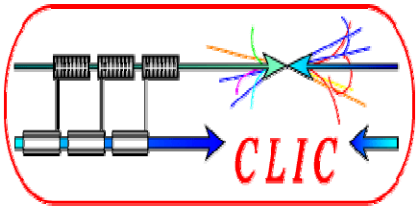
Other subjects

- **Positron generation based on Compton Scattering**
- **Damping Rings,**
- **Klystrons (L band) & Modulators with long pulses and high efficiency**
- **High power beam dumps**
- **Operational & reliability issues**
- **Machine Protection System**
- **Others?**



(CLIC/CERN) limitations

- **CERN resources dedicated to ILC very limited:**
  - **Man-Power: 1.2 FTE; Mat Budget: 40 kCHF**
- **Available resources allocated to CLIC study by CLIC/CTF3 collaboration**
  - **24 Institutes from 13 Countries**
  - **Broad overlap between CLIC and ILC collaborating Inst.**
- **Possible use of CLIC resources on ILC study at the strict condition that final result is beneficial to CLIC study**
  - **And vice-versa**



CLIC/ILC Collaboration Meeting: 08/02/08 (Accelerators and Detectors)

prepared by

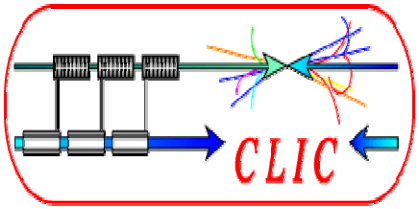
Marc Ross, Nick Walker, Akira Yamamoto

ILC-GDE Project Managers

J.P.Delahaye

CLIC Study Leader and ILC-GDE member

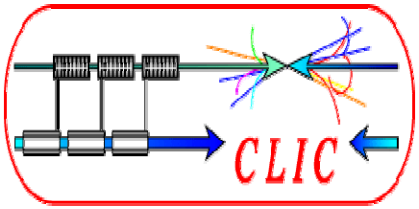
About 35 participants from Accelerators and Detectors



Objectives of the meeting

- **review selected subjects and define tasks which serve common interests –**
  - **ILC and CLIC studies.**
  - **(or which are close enough to yield useful direct exchange)**
- **Once defined, nominate contact persons for each subject (convenors)**
  - **Prepare plan of actions including schedule**
  - **And will follow-up afterwards on listed tasks**

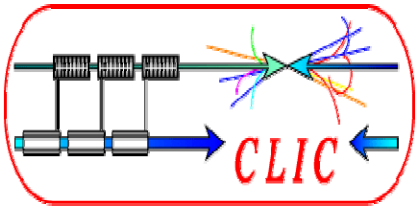
http://indico.cern.ch/conferenceDisplay.py?confId=27435



General remarks

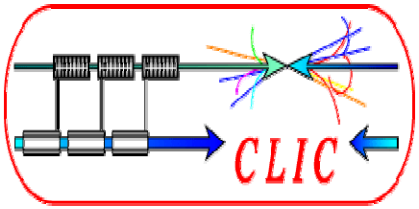
- **Short (1 day) and exploratory meeting but identification of large number of issues with common interest on each of the five selected activities**
- **Possible common studies not limited by number of subjects but by available resources**
- **LHC experience extremely useful for ILC and CLIC**
- **Review and adoption of common tools:**

  Beam dynamics, Cost, etc…



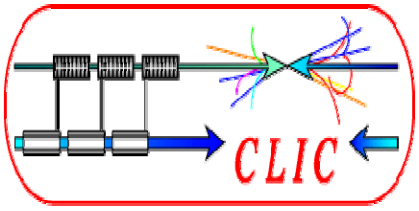
Method?

- **Presently (for each sub-system):**
  - **ILC team working on ILC system with ILC beam at 500 GeV**
  - **CLIC team working on CLIC system with CLIC beam at 3 TeV and scaling down to 1 TeV and 500 GeV**
  - **Fruitful exchanges between technical experts**
  - **Different designs of sub-systems for (not always) good reasons**
- **Possible future**
  - **CLIC & ILC teams working together on CLIC and ILC systems at 500 GeV**
  - **Identify together if same design/technology can be used or not**
  - **understand why and what necessary differences**
  - **Define together necessary modifications of the sub-system for the upgrade in energy to 1 TeV for ILC and 3 TeV for CLIC**



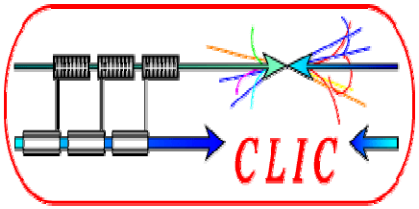
CLIC – ILC Collaboration Strategy

- **Connect the 2 communities so that their projects are *comparable***
  - **There will be competition / collaboration**
  - **This is the nature of alternative technology development)**
- **Take advantage as much as possible of synergies**
  - **Minimisation of overall resources**
  - **Minimisation of the differences**
- **Components – working together on pieces**
  - **Common design or identify motivation for differences.**
- **Plug compatibility:**
  - **One person/team develops a component that would work for both.**
  - **Starting at the same energy.**



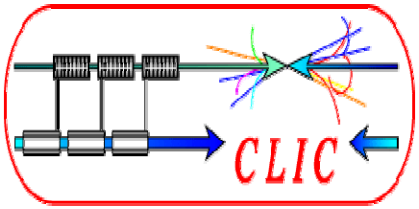
Meetings

- **Goal: Break down barriers, contact between both communities**
- **No additional meetings…**
- **Overlap in each other's meetings.**
  - **Working group agendas and attendance**
  - **Sharing experts**
  - **CLIC members participating to ILC meetings**
  - **ILC members participating to CLIC meetings**
    - **Next CLIC08 Workshop on October 14-17, 2008**
- **LCWS could/should be more generic – and include the CLIC community explicitly**



Organisation

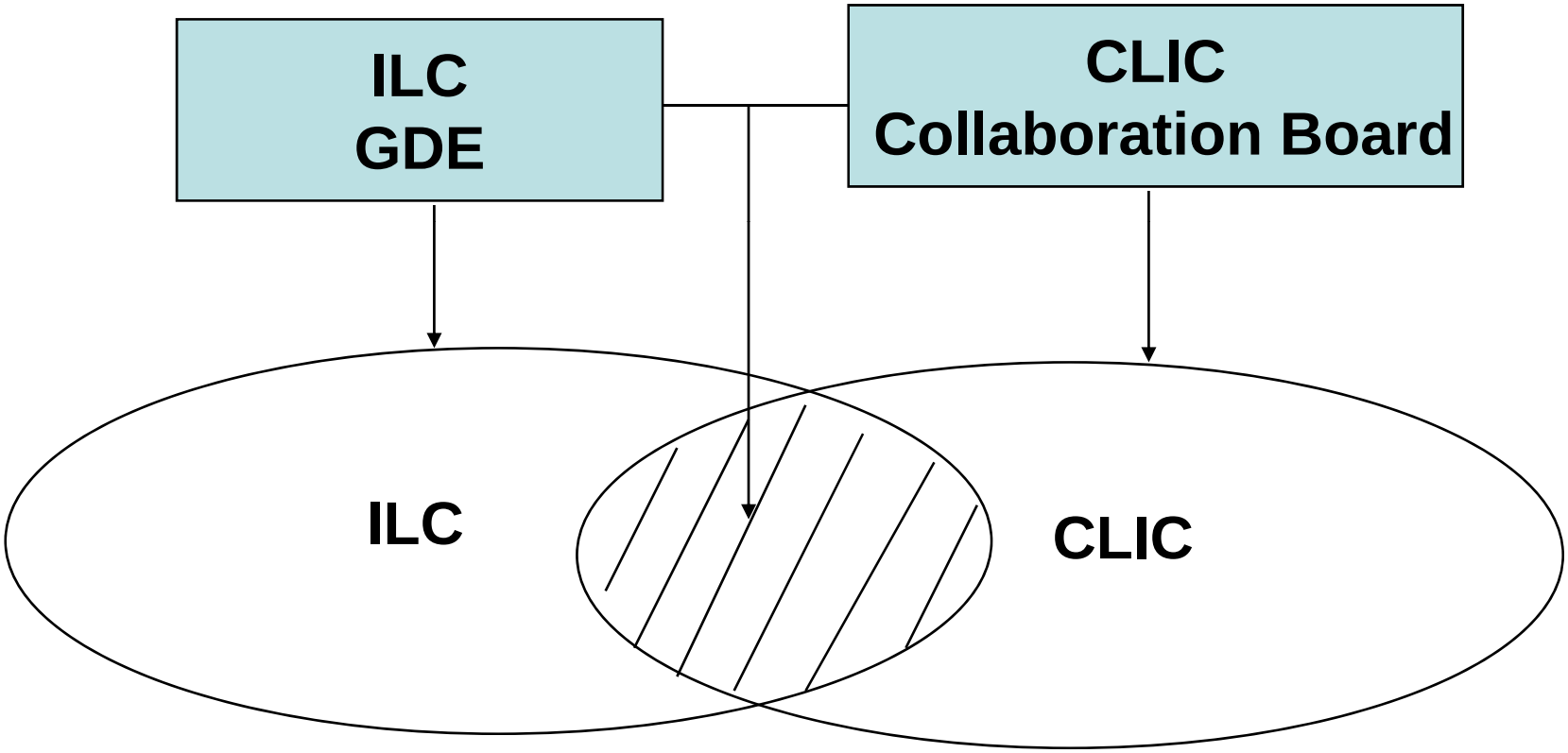
- **Nominate Conveners for each activity**
  - **Proposal of reasonable plan of action with deliverables and schedule for approval by each study**
  - **Identifying available resources**
  - **Reporting progress in corresponding meetings**
- **At long(er) term, prepare presentation and comparison of the various options by the community in a credible and common basis.**
  - **Define the criteria of comparison.**

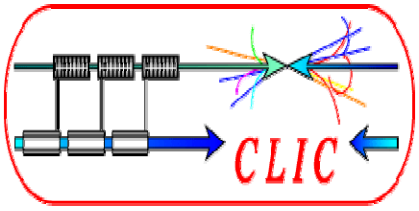


Conveners to be nominated soon by B.Barish and JPD

	CLIC	ILC
CFS		
BDS & MDI		
Detectors		
Cost & Schedule		
Beam Dynamics		
Others?		
Positron source?		
…..		

Management?





Conclusion

- **CLIC/ILC collaboration on subjects with strong synergy**

  Win –Win for both studies and for HEP

- **Ambitious but realistic and practical approach**
  - **starting on limited number of subjects**
  - **conveners to define plan of (limited) actions**
- **Most efficient use of limited resources**
- **Provide credibility to Linear Collider Community by:**
  - **mutual understanding of status, advantages, issues of both tech.**
  - **responsible preparation of the future comparison of possible options for HEP with agreed pro&cons and criteria**

Collaborative Competition and / or Competitive Collaboration