



# Revised Agenda

- 14:00 Introduction and LC status - B. Foster
- 15:00 CLIC Sol status/PPAP Meeting - P. Burrows
- 15:15 Low-Mass - T. Greenshaw
- 15:25 SPIDER – J. Velthuis
- ~~15:45 Accelerators & Industry - D. Wilcox~~
- 15:55 Report on Ambleside LC School - A. Sopczak
- 16:00 Tea
- 16:15 Polarisation studies- G. Moortgat-Pick
- 16:25 Theory Update - G. Moortgat-Pick
- 16:40 Status of SiD – M. Stanitzki
- 16:55 Status of ILD/CLIC detectors - M. Thomson
- 17:10 General discussion, including Collaboration Council meeting if required.
- 17:30 Close



# Overview

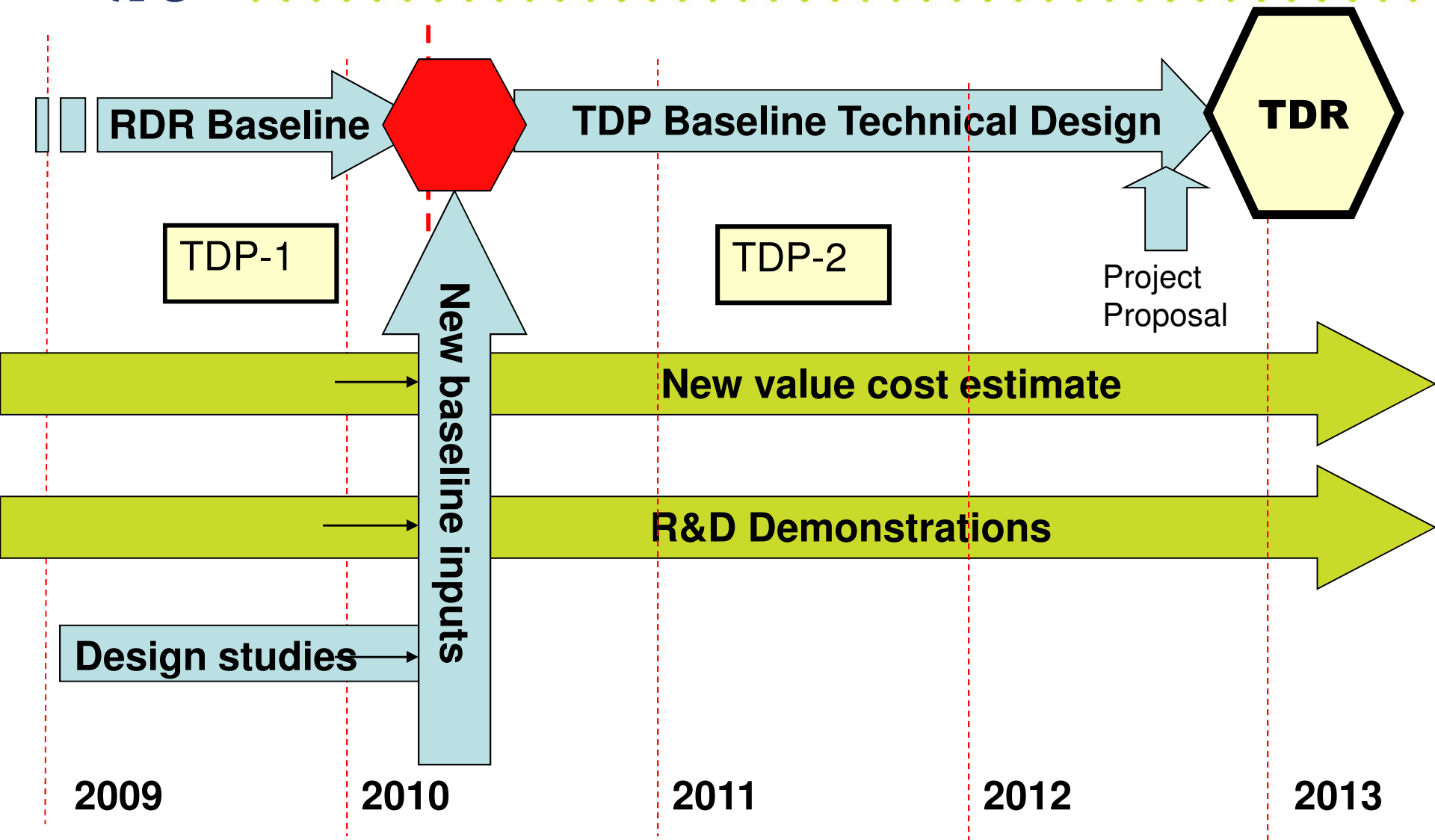
B. Foster (Oxford)

LCUK Daresbury  
22/09/09

- ILC Progress since last LCUK
- Review Meetings
- ILC/CLIC Collaboration
- Status of experiments
- “Political” meetings – FALC, ILCSC...
- UK situation and Steering Committee discussions



# GDE ILC Timeline



## Risk Mitigating R&D

- SCRF Technology (e.g.gradient)
- Damping ring electron cloud
- Fast Kicker/Final Focus @ ATF2
- ...

## Beam Test Facilities

- ATF / ATF 2 (KEK)
- CsrTA (Cornell)
- TTF/FLASH (DESY)
- ...

## Machine Design / Cost

- CFS / Value Engineering
- Accelerator Design & Integration



# Updated R&D Plan

## Major TDP Goals:

- Updated ILC design
- Results of critical risk-mitigating R&D
- Updated VALUE estimate and schedule
- Project Implementation Plan



## *ILC Research and Development Plan for the Technical Design Phase*

Release 4

July 2009

ILC Global Design Effort

Director: Barry Barish

Prepared by the Technical Design Phase Project Management

Project Managers:

Marc Ross  
Nick Walker  
Akira Yamamoto



# Updated R&D Plan

- Resource total: 2009-2012

FTE	SCRF	CFS & Global	AS	Total
Americas	243	28	121	392
Asia	82	9	51	142
Europe	108	17	64	189
	433	55	236	724
MS (K\$)	SCRF	CFS & Global	AS	Total
Americas	18080	2993	6053	27126
Asia	23260	171	5260	28691
Europe	9890	921	530	11341
Total	51231	4085	11843	67158

- Not directly included:
  - Other Project-specific and general infrastructure resources which are overlap with ILC TDP



# R&D Resources outlook

- Flat year-to-year resource basis
  - Focused on technical enabling R & D
  - Limited flexibility to manage needed ILC design and engineering development
- Well matched between ILC technical and institutional priorities with some exceptions:
  - Positron system beam demonstrations
  - CF & S criteria optimization and site development



# TDP Goals of ILC-SCRF R&D



35 MV/m  
Gradient Yield  
in 9-cell cavities

31.5 MV/m  
average  
gradient in a  
cryomodule

Linac  
"String Test"

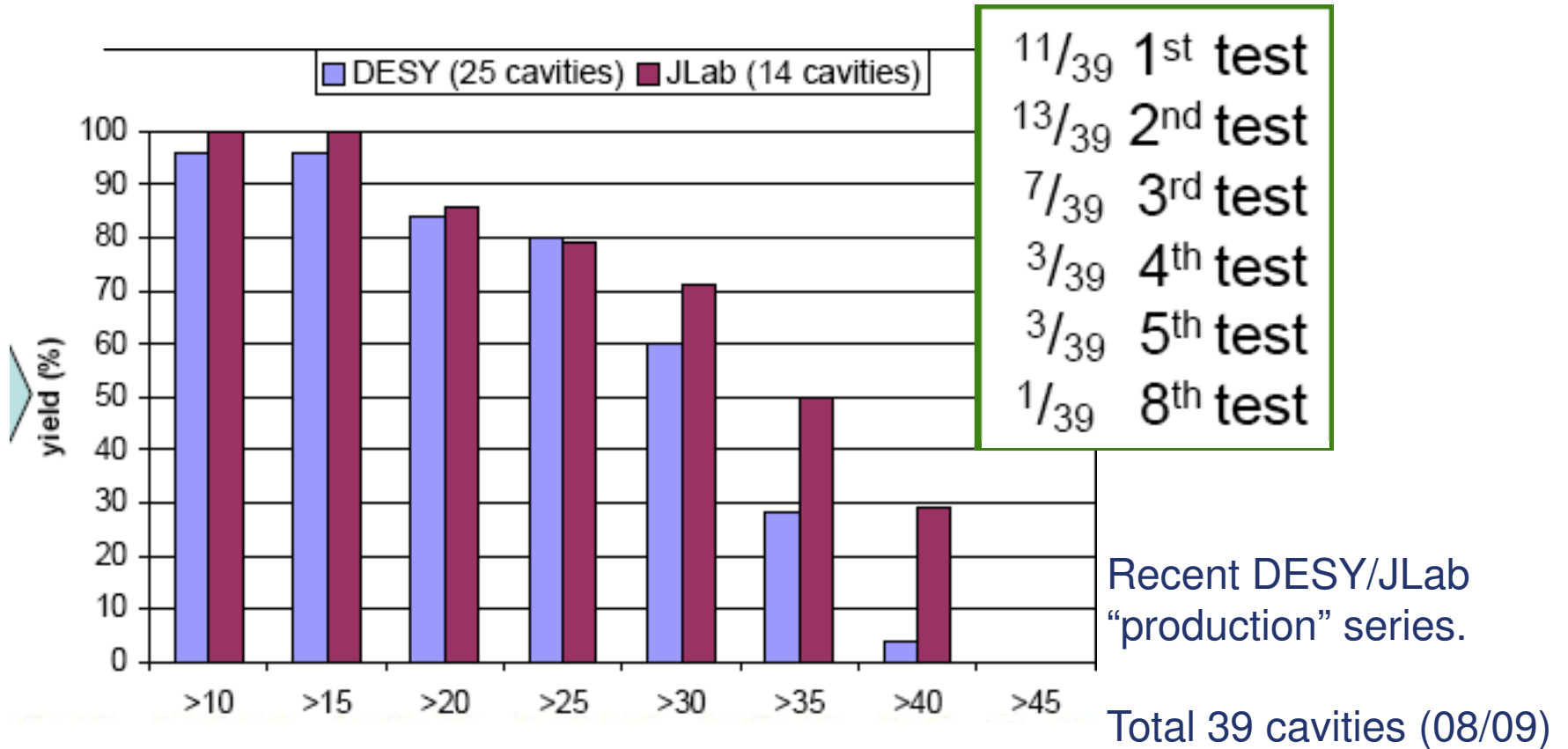




# TDP Goals of ILC-SCRF R&D

- Gradient: single biggest cost driver
- RDR baseline:
  - **$\geq 35$  MV/m vertical (acceptance) test**
  - **$\geq 31.5$  MV/m average operational gradient**
- Proof of principle of gradient achieved
  - **Many single-cells**
  - **Tens of 9-cells**
  - **Operational acceleration demonstrated (TTF/FLASH)**
- GDE Focus on mass-production yield and cost
  - **2010 goal: *process yield 50%***
  - **2012 goal: *production yield 90%***

# Current status of cavities



Current status:  
 50% yield at ~ 33 MV/m;  
 (80% >25MV/m)

**Baseline gradient re-evaluation (TDP1) expected to be based on sample of >60 cavities**

Field Emission greatly reduced (rinses)  
 → identified RDR barrier



# But what is “yield”...?

- We had better all agree!
  - Original S0 concept assumed:
    - Surface can be reset according to the EP process, and
    - Multiple processes may be integrated for statistics.
  - Several years of experience shows
    - Repeat processing may cause degradation
  - Processing and Test recipe has been updated
    - Complete the process and test only with the first cycle
      - no further processing if the results are acceptable
  - Revision of the definition of ‘yield’ is required
    - Process (R&D) and Production definitions are different
    - A common means for collection and evaluation of the data is required



# Global cavity database

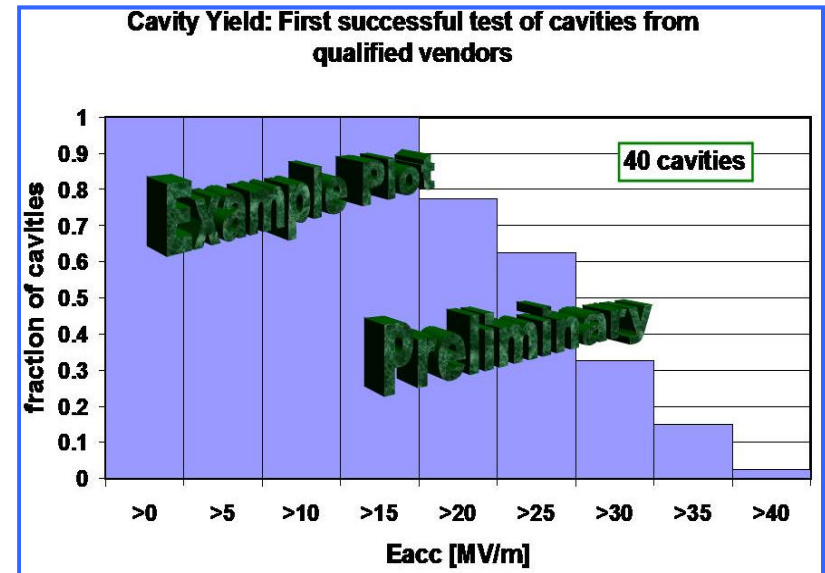
## • Global Data Base Team formed:

- Camille Ginsburg (Fermilab) - Team Leader & Data Coordination
- Zack Conway (Cornell University)
- Sebastian Aderhold (DESY)
- Yasuchika Yamamoto (KEK)
- Rongli Geng (JLab) - GDE-SCRF Cavity TA Group Leader

## • Activity Plan/Schedule

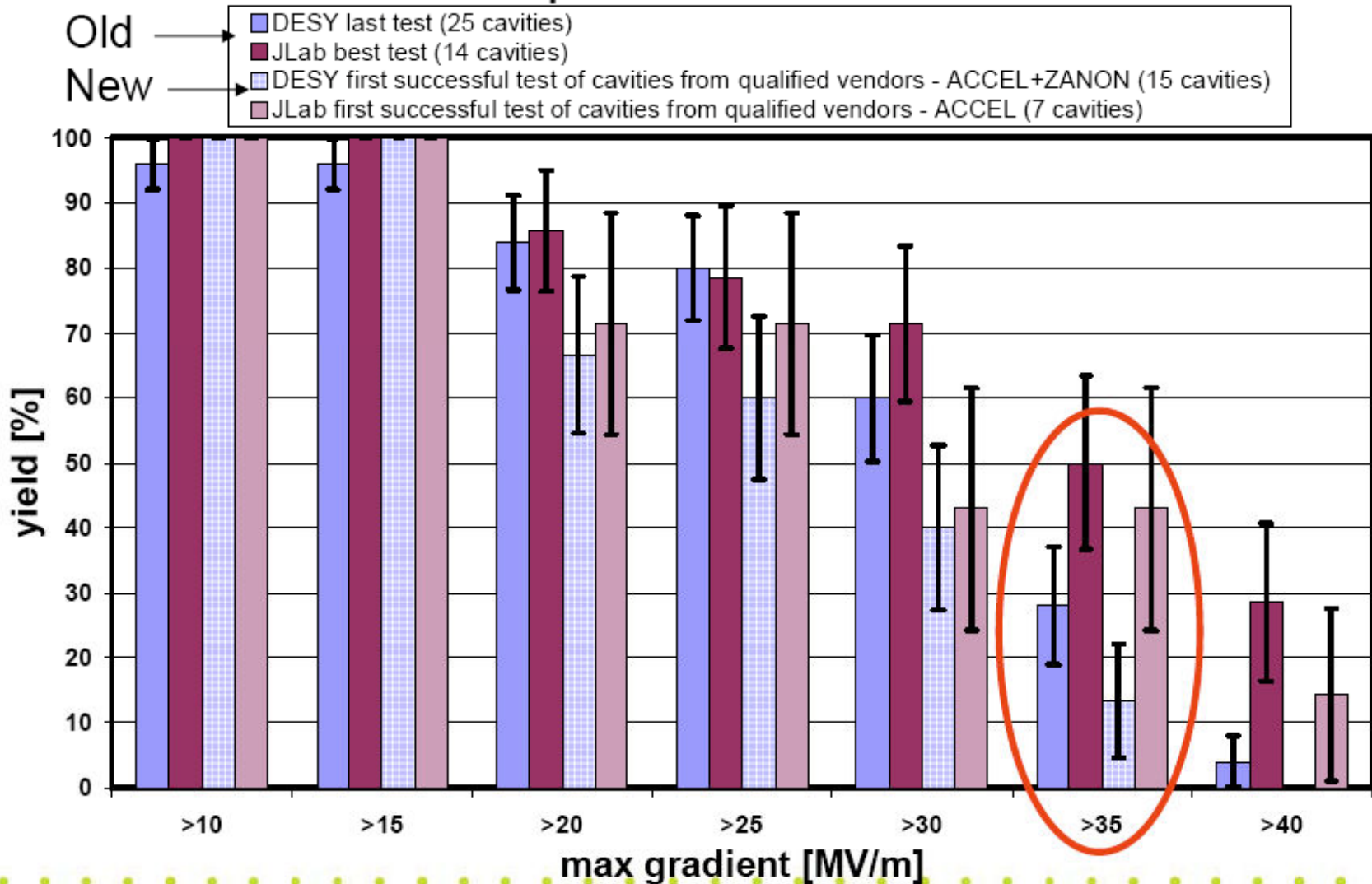
- End July 2009:
  - Determine whether DESY-DB is viable option,
- Sept. 28 - Oct. 2, 2009: (ALCPG/GDE)
  - Dataset web-based
    - Support by FNAL-TD or DESY
  - Some well-checked, easily explainable, and near-final plots, available, such as
    - **Production (process) yield**
      - Qualified vendors and All vendors**
      - Time evolution of some quantities
- End Nov. 2009:
  - With broader group of colleagues' input,
  - Finalize DB tool, web I/F, standard plots, with longer-term tool improvement plans

Example: First Plot:  
Global Production Yield



# New yield definition

## Electropolished 9-cell Cavities



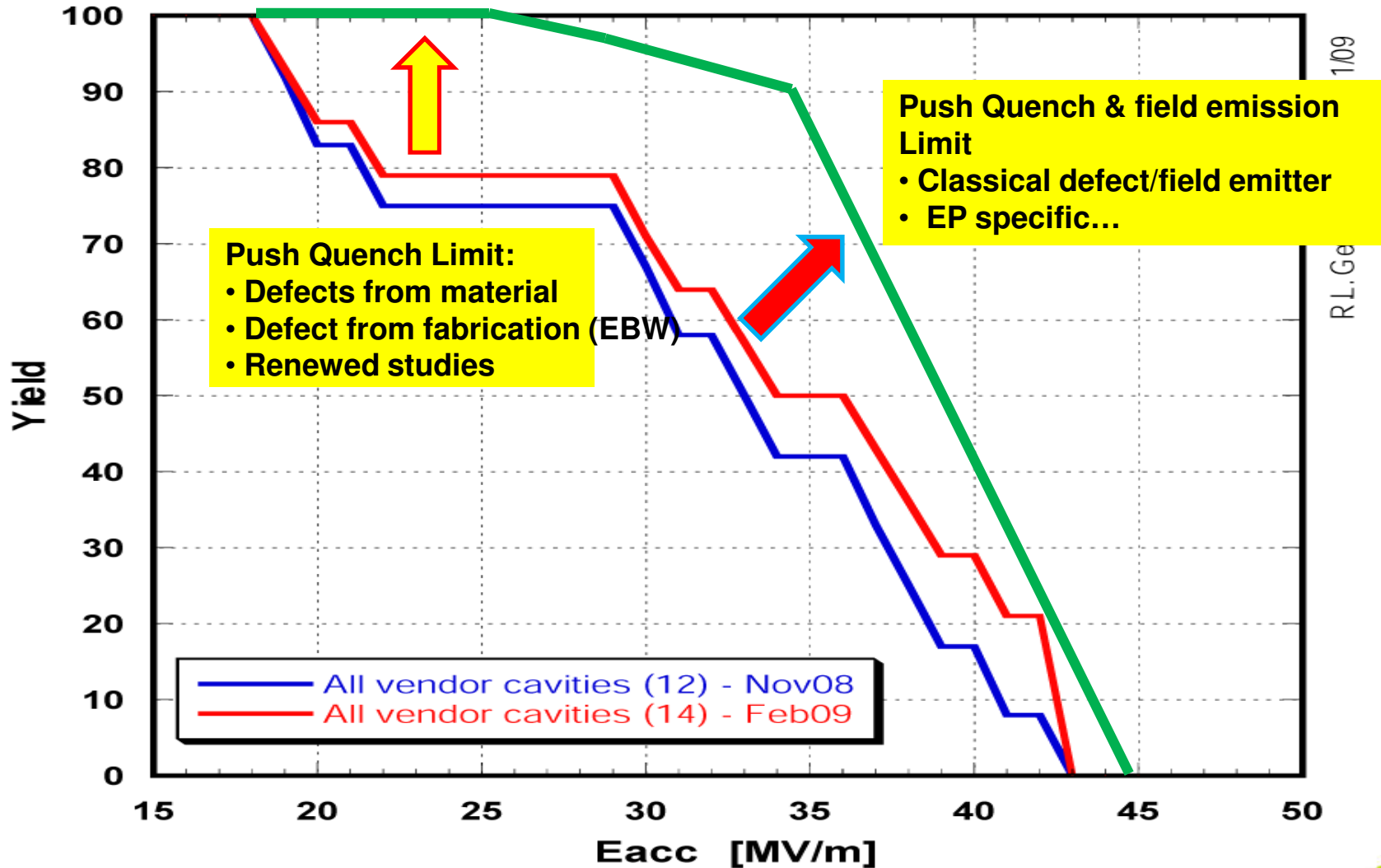
max gradient [MV/m]

Global Design Effort



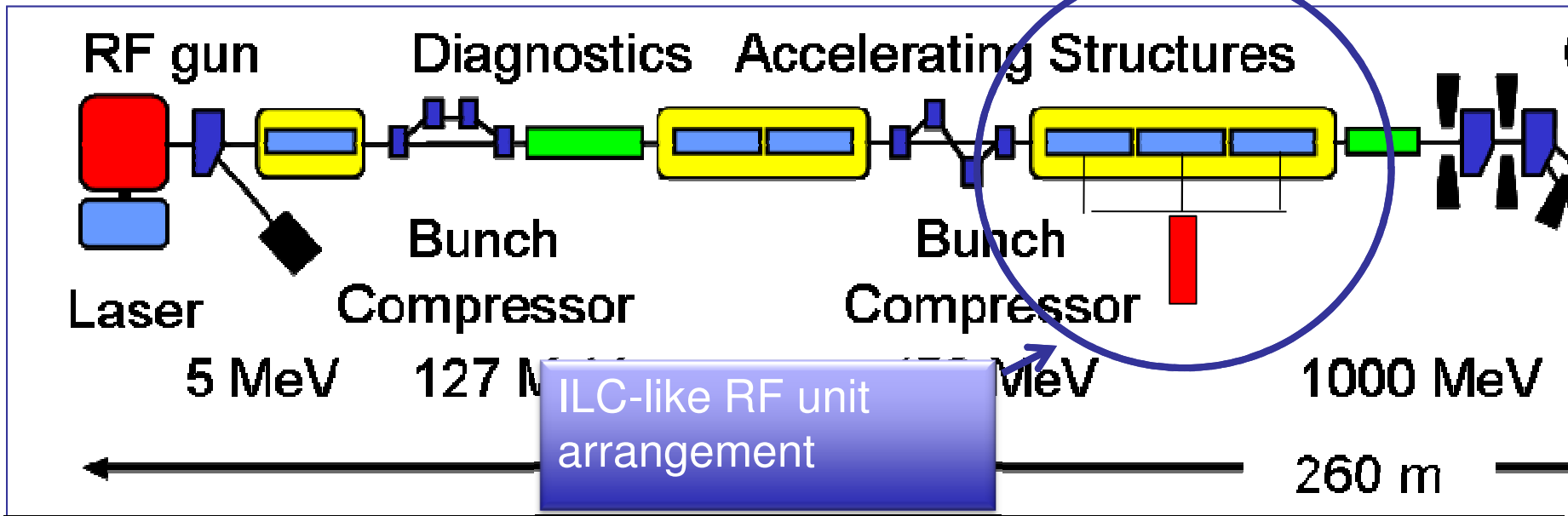
# How to reach design goal?

Best Gradient Yield Feb 09 vs Oct 08  
All Vendor Cavities Processed at JLab



1/09  
R.L. Ge

# Beam Tests



		 X-Ray Free-Electron Laser		FLASH design	FLASH experiment
Bunch charge	nC	1	3.2	1	3
# bunches		3250*	2625	7200*	2400
Pulse length	$\mu$ s	650	970	800	800
Current	mA	5	9	9	9



# Industrialisation

- Global status of Industries
  - Research Instruments and Zanon in Europe
  - AES, Niowave, PAVAC in Americas
  - MHI in Asia

Project Scope			
Euro XFEL	~800	2 years	~1 cavity / day
Project X	~400	3 years	~2 cavities/ week
ILC	~15,500	4 years	~20 cavities / day
(÷ 3 regions)			~7 cavities / day)

- Industrial Capacity: status and scope
  - No company currently has required ILC capacity
  - Understand what is needed (and cost) by 2012



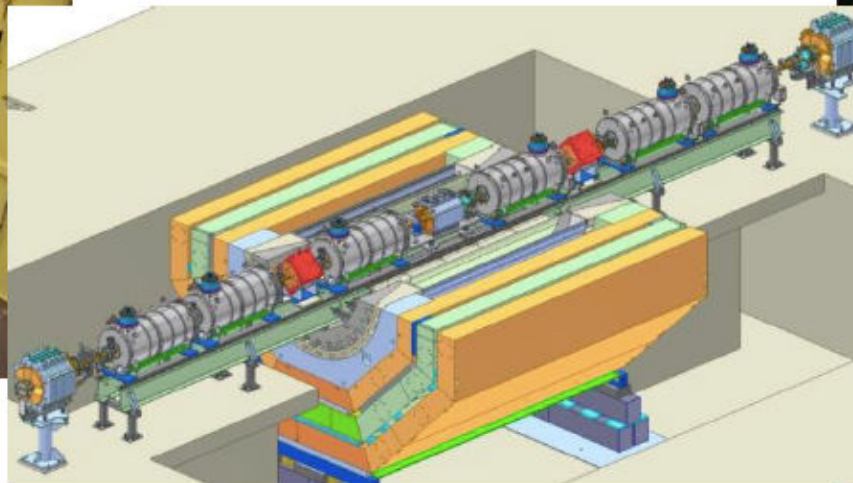


# Industrialisation

Company	# employees	Features	Date
AES	~26	Experience with RHIC magnet production in the previous company, Dedicated for SC/NC RF technology	Feb. 24
NIOWAVE	~40	A New company dedicated for Niobium and microwave technology	Feb. 25
ACCEL/RI	~100	Most experienced company with SCRF, and adaptable for production scale of European XFEL	Mar. 4
ZANON	~200	Much experienced with plumbing work and SCRF cavities, and with HERA cryostat, Adaptable for scale of European XFEL	Mar. 6
MHI	>>1,000	A leading company in heavy-industries in Japan, and experienced with SC/NC RF cavities and accelerator technologies	Mar. 10
PAVAC	~30	A unique features with EBW machine itself and SCRF cavity manufacturing	May 7

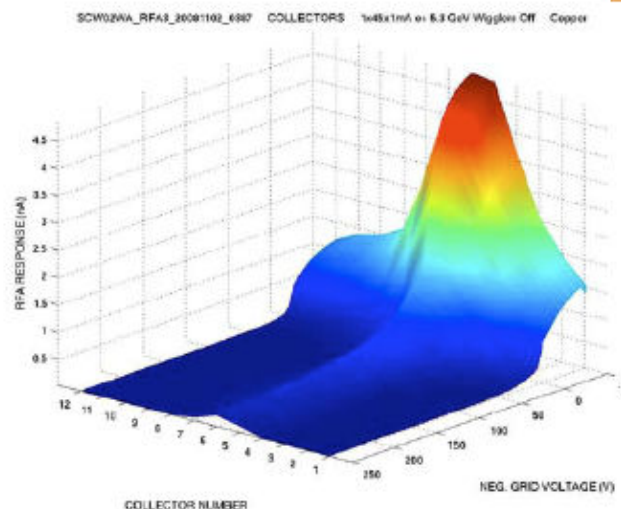


# CLEO Damping Ring studies



Installation of wigglers in former location of CLEO (above).

Retarding field analyzers in wiggler vacuum chambers, and first data (right).

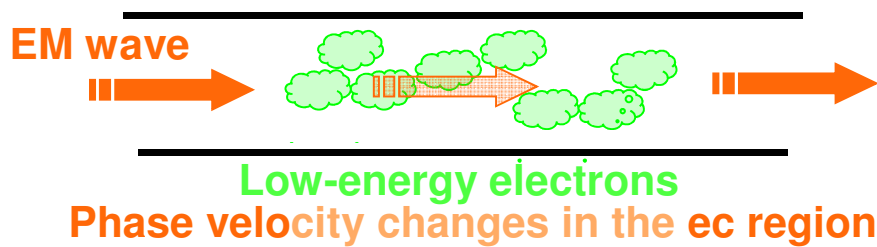




# CLEO Damping Ring studies

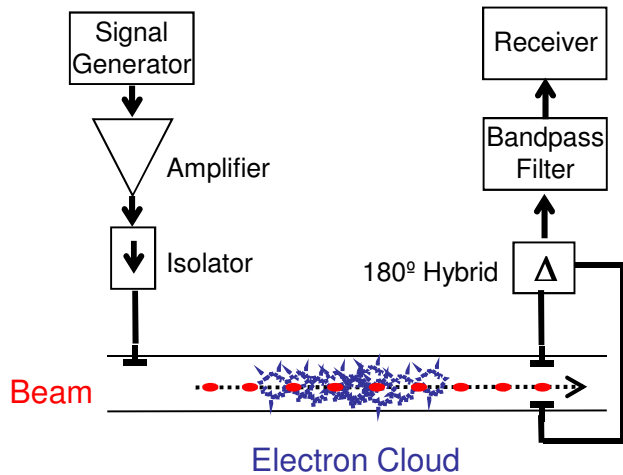
Induced phase modulation in the propagation of EM waves through beampipe

## Beampipe

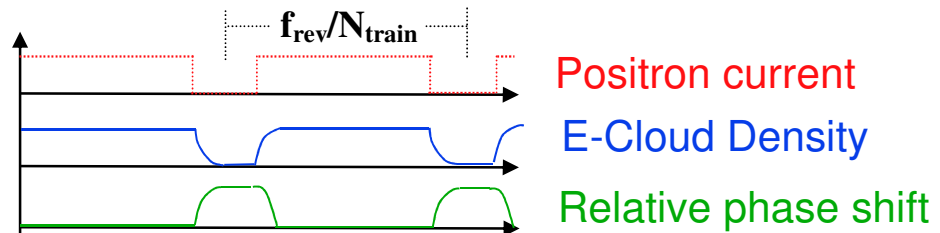


$$k^2 = \frac{\omega^2 - \omega_c^2 - \omega_p^2}{c^2}$$

plasma frequency  
 $2c(\pi\rho_e r_e)^{1/2}$



## Experimental apparatus



Gaps in the fill pattern set the fundamental modulation frequency (1st sideband). Higher order components depend on the transient ecloud time evolution during the gap passage.



# CLEO Damping Ring studies

Coherent tune shift vs. bunch number

Tune shift data 1.885 GeV 10 bunch train 0.75 mA/bunch positrons 4/2/07

Purple Squares: Simulation, vertical tune shift

Blue Circles: data, vertical tune shift

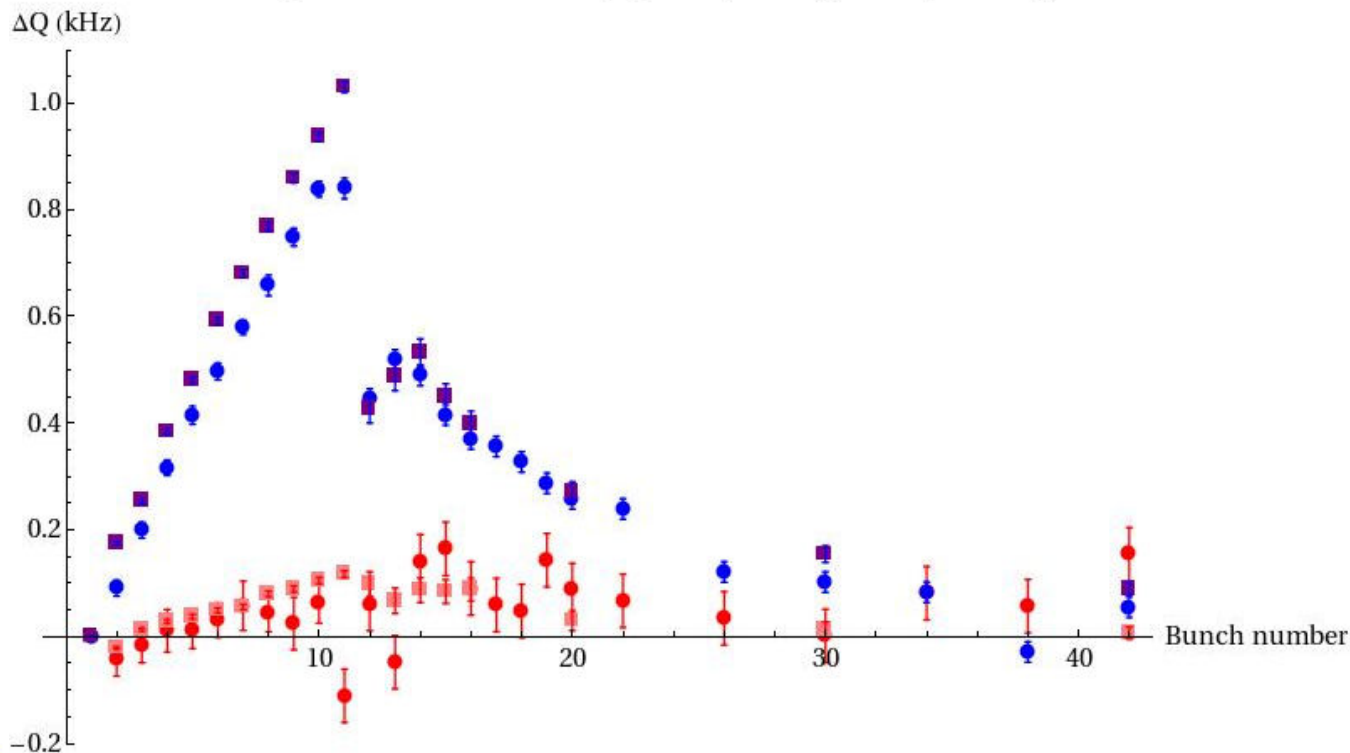
Pink Squares: Simulation, horizontal tune shift

Red circles: data, horizontal tune shift

Simulation,

CESR-TA drift at 1.885 GeV: SEY=2.0, epk=310, r=15%, QE=12%, 51 nicks, pa=1

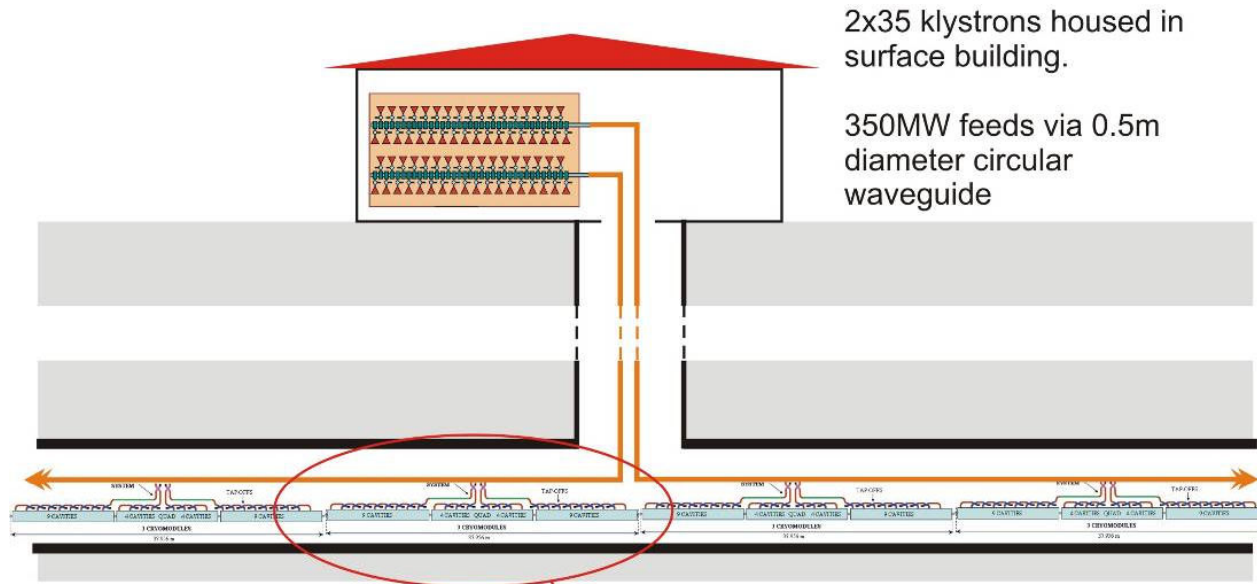
CESR-TA dipole at 1.885 GeV: SEY=2.0, Epk=310, r=15%, QE=12%, 51 nicks, p





# AD&I(=old MM) R&D

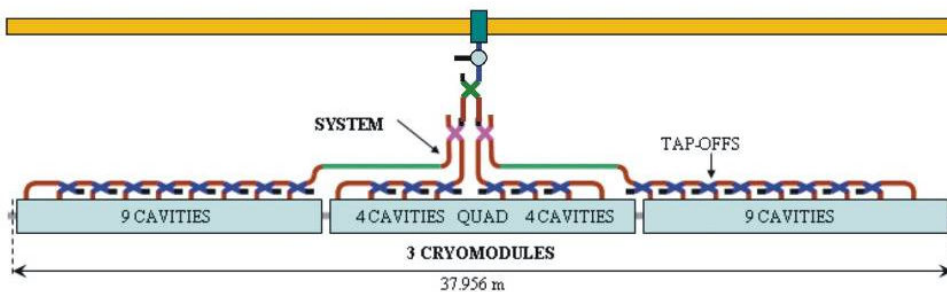
- Single Tunnel Configuration(s)
  - Change RF power distribution
- Reduced Beam Power
  - less RF,
  - smaller DR (6km -> 3km)
- Central Injector Housing Integration
  - Sources sharing tunnel with BDS
- CFS: Value Engineering



2x35 klystrons housed in surface building.

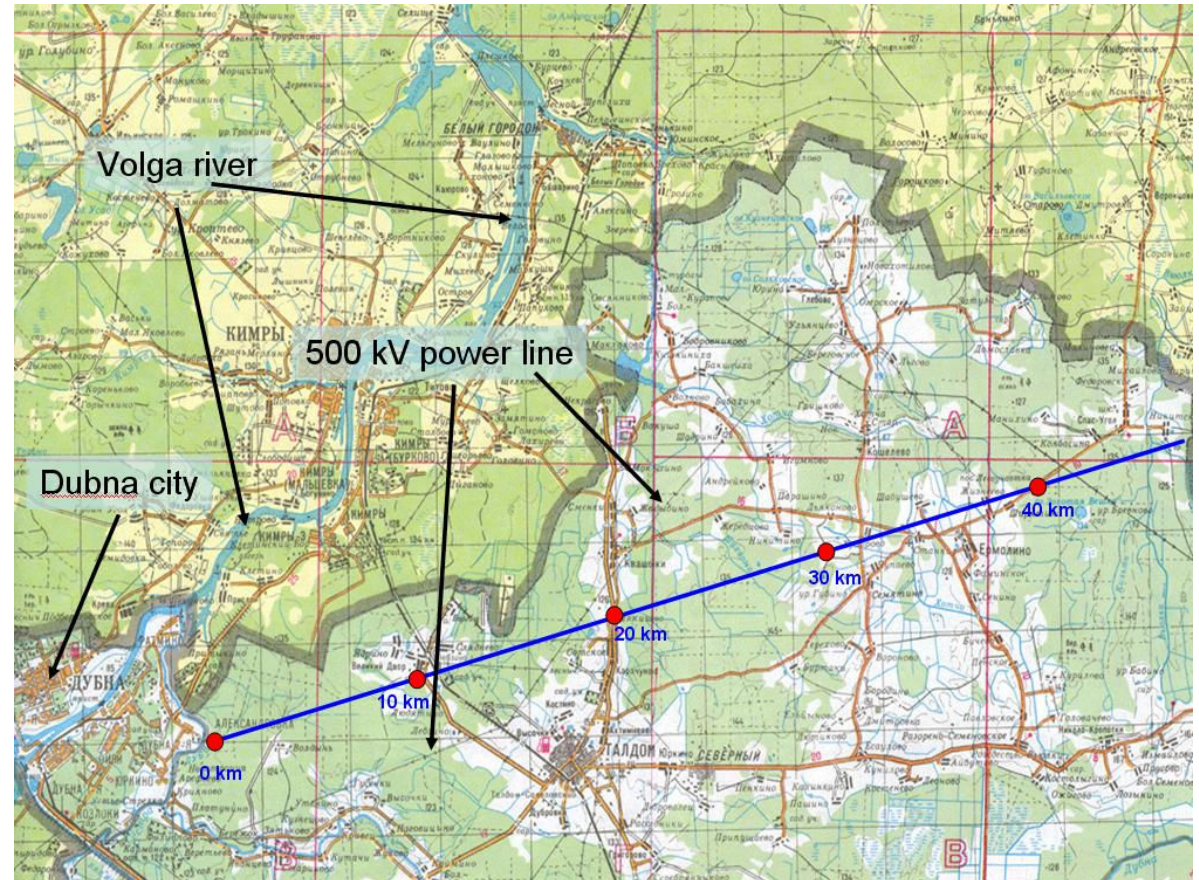
350MW feeds via 0.5m diameter circular waveguide

- Klystron cluster concept - keep access with 1 tunnel
- Also KEK concept of “individual” klystrons for each cavity in tunnel



Each tap-off from the main waveguide feeds 10 MW through a high power window and probably a circulator or switch to a local PDS for a 3 cryomodule, 26 cavity RF unit (RDR baseline).

- DESY workshop in June discussed further collaboration on geology and other issues with JINR.



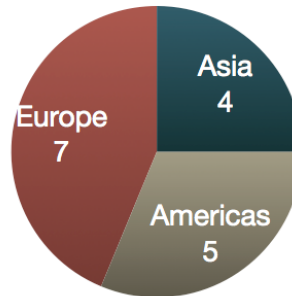
# AAP Review

- All this progress has to be reviewed! AAP 4-day meeting during TILC09 in Tskuba. Addressed SCRF, CF&S, electron-cloud, test facilities & project management.

## AAP Reviewers

### • Regular Members

- C Damerell
- J Dorfan
- E Elsen
- T Himel
- M Kuriki
- O Napoly (\*)
- K Oide
- H Padamsee
- T Raubenheimer
- D Schulte
- W Willis



### • External Members

- N Holtkamp (\*)
- L Rossi (\*)
- T Tajima
- M Uesaka
- F Zimmermann

(\*) apologies received

- F Lehner served as the scientific secretary for this meeting





# AAP Review – SCRF

- *The AAP recognizes that the entire R&D program will not conclude by 2012, and still need results of these test facilities. The XFEL and Project-X will be also important, especially in evaluation of the manufacturing cost of a large linac.*
- *The AAP recommends a strong interaction between laboratory experts and new vendors during all stages of cavity fabrication.*
- *The AAP recommends that for the yield study further evaluation be made of the quality of cavities (Q-values) along with gradient. Electron loading and x-ray intensities at 35 MV/m should be closely monitored.*
- *The AAP fully supports the plug-compatibility concept for the SCRF R&D and suggests introducing an element of competition by maintaining a score list of advantages and disadvantages of individual design variants for cavity, coupler and tuner.*
- *The AAP believes that the final machine design, namely the design that will be sent to industry for manufacture, requires a single design for the RF components.*



# AAP Review – e-cloud

- *The AAP notes that once the current rounds of measurements are completed and the modeling software has been updated to incorporate what has been learned from the measurements, the impact of the e-cloud must be reevaluated for the 12 ns and 6 ns bunch spacings in the damping ring designs. This will provide an updated assessment of the risk to damping ring performance from the effects of the e-cloud. Should the risk factor be too high, the AAP observes that a lower-current ILC machine with half the number of bunches in the 6-km configuration, i.e. 12 ns bunch spacing would operate in a safer regime with regard to electron cloud. Reducing the positron ring circumference to 3-km may risk losing this back-up solution.*
- *The AAP would like to see a plan laid out showing how the damping ring group plans to arrive at a decision for the viability of the ILC damping ring choice with respect to electron-cloud immunity. A clear set of criteria for the vacuum system should be developed that will lead to the choice of a baseline solution. Alternates along with required R&D can also be specified. A schedule for establishing the criteria and the baseline should be shown.*



# AAP Review – AD&I

- *The AAP encourages the Project Management to form and vigorously engage the planned task force to assess the re-baselining effort. The decision making on the emerging new definition should involve representatives of the MDI group and must be collectively propagated throughout all subgroups.*
- *The redesign should only be considered for those components and aspects where the benefits are high.*
- *During the transition time the RDR solution must be preserved to maintain readiness for construction of the ILC.*



# AAP Review – Accelerator Sys.

- *Overall, the AAP is impressed by the progress in all accelerator systems. The work package goals and milestones are laid out in the technical design phase report.*
- *The positron flux margins for the current layout are tight. The AAP suggests carrying out the detailed simulation studies to fully understand the requirements and possibly adapt the layout or choice of components.*
- *The AAP suggests studying or, if applicable, compiling the existing documentation on, the effect of the 150 m undulator on beam emittance, stability, and possibly implied constraints on, and requirements for, linac tuning.*



# AAP Review – Beyond 2012?

- AAP points to uncertainties beyond 2012.
- *Some aspects of the R&D for the ILC will have to continue beyond 2012.*
- *The milestone 2012 is however timely placed. The LHC will be providing operating experience of a large facility and with some luck the first physics discoveries will emerge.*
- *The HEP community is thus well prepared for the decision for the next facility. In a sense the construction of the ILC seems the natural evolution of that process, in which case the efforts for the ILC have to be ramped up without delay.*
- *Nature may be less kind or science policy makers not ready for a decision on the next big HEP project. In this case the large community must be engaged to facilitate the decision for the construction of the next HEP project. Clear guidance will be needed to focus the effort and science policy makers should start preparing the corresponding strategies now.*



# AAP Review - Management

- *The AAP suggests that the following linked strategies would be helpful in sharpening the focus of the GDE effort: a) reserve, and protect, more time for the GDE Director and the troika to formulate and agree upon project objectives b) actively and visibly (to the GDE team at large) rebalance the objectives so that they are more focused on the milestone-related goals and less emphasize an ever broadening R&D program c) take active steps to create, and support broad and coherent ownership of the core goals.*
- The full report can be found at [http://ilc-edmsdirect.desy.de/ilc-edmsdirect/file.jsp?edmsid=\\*879165](http://ilc-edmsdirect.desy.de/ilc-edmsdirect/file.jsp?edmsid=*879165)
- The GDE intends to engage the AAP directly about the conclusions and resultant actions, not wait to the next meeting to report.
- The next AAP review will take place in Oxford, UK in January 2010.
- The focus of this review will be the new machine baseline.



# PAC Review – Vancouver 05/09

There were 13 accelerator related recommendations

[http://www.fnal.gov/directorate/icfa/ILCPAC\\_Report\\_May2009.pdf](http://www.fnal.gov/directorate/icfa/ILCPAC_Report_May2009.pdf)

- *“Satisfactory progress is being made towards a Technical Design Report in 2012. At some time in the future, ILCSC guidance will be needed for activities beyond that date.”*
- *“The PAC supports the GDE Director’s AAP process, and endorses the conclusions of the AAP’s recent review. It looks forward to seeing the response to the AAP’s recommendations.”*
- *“There is some concern by the PAC on whether there will be enough cavities available to obtain meaningful statistics on the yield, and more information on the needed statistics would be helpful. Some help on this may be forthcoming from the XFEL, Project X and Quantum Beam projects.”*
- *“The PAC supports the “Minimum Machine” activities to carefully review the RDR design ..... The Committee believes that this activity should not compromise the existing ILC physics goals, and reiterates its belief that the 1 TeV upgrade option should be maintained.”*

The next meeting is scheduled for Nov 2/3 in Pohang, Korea.



# ILC-CLIC Collaboration

- CLIC – ILC Collaboration has two basic purposes:
  1. **allow a more efficient use of resources, especially engineers**
    - CFS / CES
    - Beamline components (magnets, instrumentation...)
  2. **promote communication between the two project teams.**
    - Comparative discussions and presentations will occur
    - Good understanding of each other's technical issues is necessary
    - Communication network – at several levels – supports it
- Seven working groups which are led by conveners from both projects





# ILC-CLIC Collaboration

	CLIC	ILC
Physics & Detectors	L.Linssen, D.Schlatter	F.Richard, S.Yamada
Beam Delivery System (BDS) & Machine Detector Interface (MDI)	L.Gatignon D.Schulte, R.Tomas Garcia	B.Parker, A.Seriy
Civil Engineering & Conventional Facilities	C.Hauviller, J.Osborne.	J.Osborne, V.Kuchler
Positron Generation	L.Rinolfi	J.Clarke
Damping Rings	Y.Papaphilipou	M.Palmer
Beam Dynamics	D.Schulte	A.Latina, K.Kubo, N.Walker
Cost & Schedule	P.Lebrun, K.Foraz, G.Riddone	J.Carwardine, P.Garbincius, T.Shidara



## ILC-CLIC Collaboration

- Joint GDE EC-CLIC SC meeting in June in CERN.

- Conclusions from that meeting include:

The existing working groups were deemed a success and we added two more (damping rings & positron production)

J-P Delahaye has joined the GDE EC, and BF has joined the CLIC steering committee.

We will hold a joint annual meeting in 2010.



# ILC-CLIC Collaboration

- ILCSC has approved formation of a CLIC/ILC General Issues working group by the two parties with the following mandate:
  - **Promoting the Linear Collider**
  - **Identifying synergies to enable the design concepts of ILC and CLIC to be prepared efficiently**
  - **Discussing detailed plans for the ILC and CLIC efforts, in order to identify common issues regarding siting, technical issues and project planning.**
  - **Discussing issues that will be part of each project implementation plan**
  - **Identifying points of comparison between the two approaches .**
- The conclusions of the working group will be reported to the ILCSC and CLIC Collaboration Board with a goal to producing a joint document.



# ILC-CLIC Collaboration

- Statement of common intent has caused significant political ripples.
- Long discussion at ILC – outcome that will be signed by ILCSC chair and CLIC CB Chair – still being redrafted.

## STATEMENT OF COMMON INTENT

by the CLIC Steering Committee and the ILC Global Design Effort

Recognising the consensus within the particle-physics community on the need for a linear electron-positron collider to explore the physics that will be revealed by the LHC, considering the synergies that exist and the opportunities for collaboration that arise between the ILC Global Design Effort and the CLIC study, as well as between the ILC and CLIC physics and detector studies, building up on the [CLIC/ILC joint statements](#)<sup>1</sup>, the two parties

agree that they will define a common strategy to promote and develop scientific and technical preparations for a linear collider, and to exploit wherever possible synergies to enable the design concepts for the ILC and CLIC to be prepared efficiently.

The ILC Global Design Effort Executive Committee and the CLIC Steering Committee will foster this cooperation by agreeing, reviewing and updating a list of topics of common interest. This includes, but is not limited to, the topics listed in Addendum 2 to this agreement, which already form the subjects of joint ILC-CLIC Working Groups.

This Statement of Common Intent is endorsed by the Laboratory and Institute representatives listed and signing in Addendum 1.

Signed \_\_\_\_\_

Signed \_\_\_\_\_

Date \_\_\_\_\_

Date \_\_\_\_\_

(Barry Barish, Director ILC GDE)

(Jean-Pierre Delahaye, CLIC Study Leader)

on behalf of the ILC Global Design Effort  
Executive Committee

on behalf of the CLIC Steering Committee



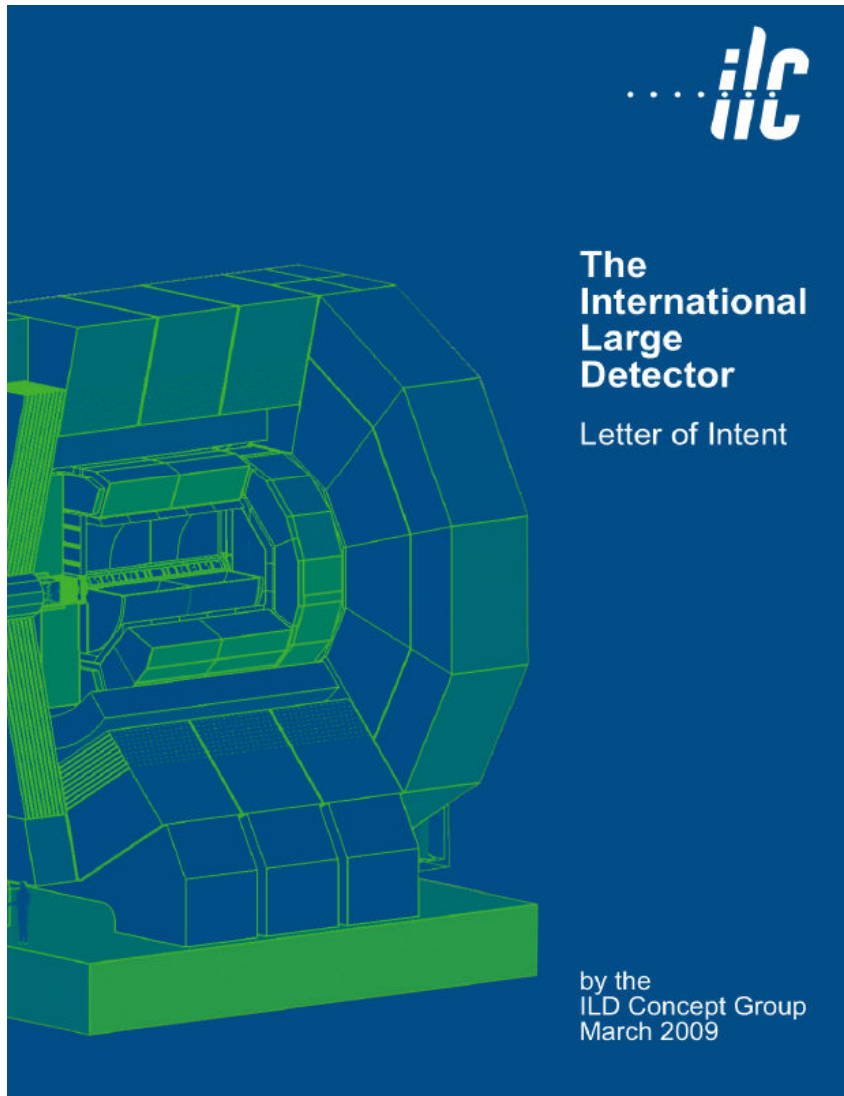
# ILC Detectors

3 Letters-of-Intent (LOI's) were received at TILC09 (April, Tsukuba). The experiments are ILD, SiD, & 4<sup>th</sup>.

The LOI's include sufficient information to enable the International Detector Advisory Group (IDAG) to proceed with validation.

The LOI's can be found at

<http://www.linearcollider.org/cms/?pid=1000472>



**An example of an LOI -**  
<http://www.ilcild.org/documents/ild-letter-of-intent>

**695 authors, 148 institutions**  
**32 counties**

**Introduction**  
**Detector Optimization**  
**Physics performance**  
**Sub-detector system**  
**DAQ and computing**  
**Detector integration and MDI**  
**Costing**  
**The group**  
**R&D plan**  
**Conclusion**



# ILC Detectors

- The fourth IDAG meeting was held in Paris on June 19-21 at LAL, Orsay.
- ILCSC announced that SiD and ILD had been validated by IAGD; R&D on dual-readout calorimetry will continue. IDAG chair (M Davier) will make validation report in Albuquerque.
- Validated LOI groups will proceed with R&Ds and complete technical design by 2012. IDAG will keep watching the entire process.



# ILC Detectors

- Interim report is planned in 2010. It will be a written report by the RD with contributions from the LOI groups on their progress.
- In 2012 the groups will complete their reports.
- In order to realize this plan, financial support will be crucial for the LOI groups to complete their R&D programs.





## FALC meeting in Quebec

- Reports on GDE technical progress from M. Harrison and on Governance from BF. I showed summaries of lessons learnt from “cognate projects” and timetable for future work. Quite positive response to both talks.
- A. Suzuki delivered ICFA report, which also contained proposals for ICFA/ILCSC to take a more active part in ILC Governance discussions. Not entirely clear what he was proposing.



## The ITER Project

ITER agreement includes 29 articles + annexes, quite detailed

Agreement for 35 years, members can leave after 10 years.

Host (EU) + 6 member states (US, India, Russia, Korea, Japan, China)

In-kind contributions + small (12%) common fund in cash

Host ~ 45% contribution + 3% each member state. Costs in IUA's.

Project reports to the ITER Council which meets twice per year.

Budget – in flux; ~ 1 ILC

### Issues

- All disagreements end up at the Council for resolution, insufficient Project manager authority: very inefficient
- In-kind contributions do not always follow national technical interfaces, thus project integration is more complicated than necessary
- Normal construction project design changes are difficult to implement due to agreements on in-kind contributions of components which are difficult to change
- Relative cost changes in the different systems effectively change member contributions
- Value engineering & associated cost control difficult with IUA's & in-kind
- More detailed engineering design than for ILC – but of components not all of which worked or were tested.
- No accepted project-wide management tools yet



# FALC meeting in Quebec

- Other projects for which I provided “1-page summaries”: ALMA, X-FEL, FAIR, SKA, ESS..
- Work of the EC Governance group and the ILC-HiGrade Governance group, both chaired by BF.
- Quite ambitious timetable presented – and endorsed (= not objected to) by FALC.



## Timescales

- 1) FALC presentation – July 13<sup>th</sup> 2009
- 2) Albuquerque Sep 29 – Oct 3 – tentative conclusion on funding model – fractions per partner, size of common fund etc.
- 3) EC face-to-face ~ Jan. Oxford – conclusion on funding models, preliminary conclusion on governance model options
- 4) Beijing March/April 2010? – conclusion on governance model options
- 5) Write preliminary governance report and iterate May – June 2010
- 6) Present to and hope to get agreement from ICFA, ILCSC, PAC & FALC – June-July 2010?
- 7) Present at Paris ICHEP July 2010 – N.B. this is not a final report and no funding authority/government will be expected to sign off on it. Comments/criticisms etc however would be **very** welcome.



## FALC meeting in Quebec

- Other things at FALC – SuperB status report from R. Petronzio. LHC Status from R. Heuer.
- No negative statements on ILC from e.g. R. Wade.
- Rather informative update on discussions in CERN Council wrt the geographic and scientific expansion of CERN from T. Akesson.
- Could have important ramifications for ILC.
- I also reported these and discussed them at ILCSC, which I report on next.



# ILCSC Meeting 8/09

- ILCSC met 19/08/09 in Hamburg.
- Reports from B. Barish, BF and S. Yamada.
- ELCSC also met in advance on 3/08/09. First meeting under new ECFA chair, T. Nakada. MUCH more useful meeting than of late, attended by almost all members.
- Last meeting for current ILCSC Chair, E. Iarocci. Attended by new Chair of ILCSC, Jon Bagger from Johns Hopkins.
- My report also discussed expansion of CERN and some other developments.



## Other developments

The EU initiative on European Scientific Infrastructures (ERIC) mentioned in context of ESS – will be important for future European Infrastructures but not directly applicable for fully international projects such as ILC – nevertheless, interesting for ILC.

CERN Council Strategy Group – planning to revise current European Plan, taking close account of world situation, in around 2012. Fits in well with GDE plans.

OECD study – OECD Megascience forum, in particular secretariat led by S. Michelowski, intend to produce study on large international infrastructures. Good contacts between GDE and OECD and will work closely together.



## Other developments

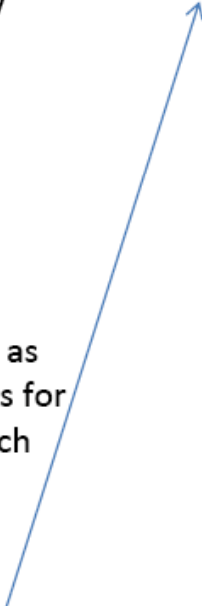
CERN Council Subcommittee on extending membership. Remit:

- To work out scenarios for the strategic development of the Organisation and its Geneva laboratory in terms of scientific fields as well as geographical enlargement. The geographical enlargement will include considerations about new Member States and relationships with countries that are not Members.
- The Working Group should discuss a number of scenarios between the two extreme positions of (1) CERN becoming a world organisation (in a laboratory sense and/or in a political/organisational sense), open to all countries interested in joining, and (2) remaining what it is now, a European organization. In between these two extreme positions, a number of forms of non-European participation should be assessed (like collaborations, co" operations, states participating in one experiment, associate states, member states).



## Scientific Enlargement

Projects recognised by the Council as relevant for the European Strategy for Particle Physics is the reference for what can be considered

- CERN participation in projects outside the CERN laboratory
    - Participation by some CERN-employed scientists
    - Technical support from CERN
    - CERN providing some support as office space, meeting locations for some users participating in such projects
  - CERN being the host for Research Infrastructure outside the CERN Geneva laboratory
    - CERN as an international legal framework allowing the establishment of a new Research Infrastructure as an International Legal Entity
    - In practice the new installation get established as a CERN special programme
      - Tax/custom/access issues etc covered by the existing Protocol of Privileges and Immunities
      - Only a simple Host State Agreement is required; the sensitive issues are already handled by the Protocol
- 

Possibly triggered by ApPEC asking CERN (or ESO or ESA) to establish the RI as a CERN special programme

# Global projects and CERN

- ITER model
  - A new international body is set up.
    - CERN is one of several stakeholders in that body
    - This body mandate CERN to host the project
- Like LHC experiments
  - The CERN Council establishes the project
    - Defines its organisation
      - Stakeholder body
      - Decision making procedures
  - This model could also be an interim set-up before the ITER-model is ready
    - Gain time!

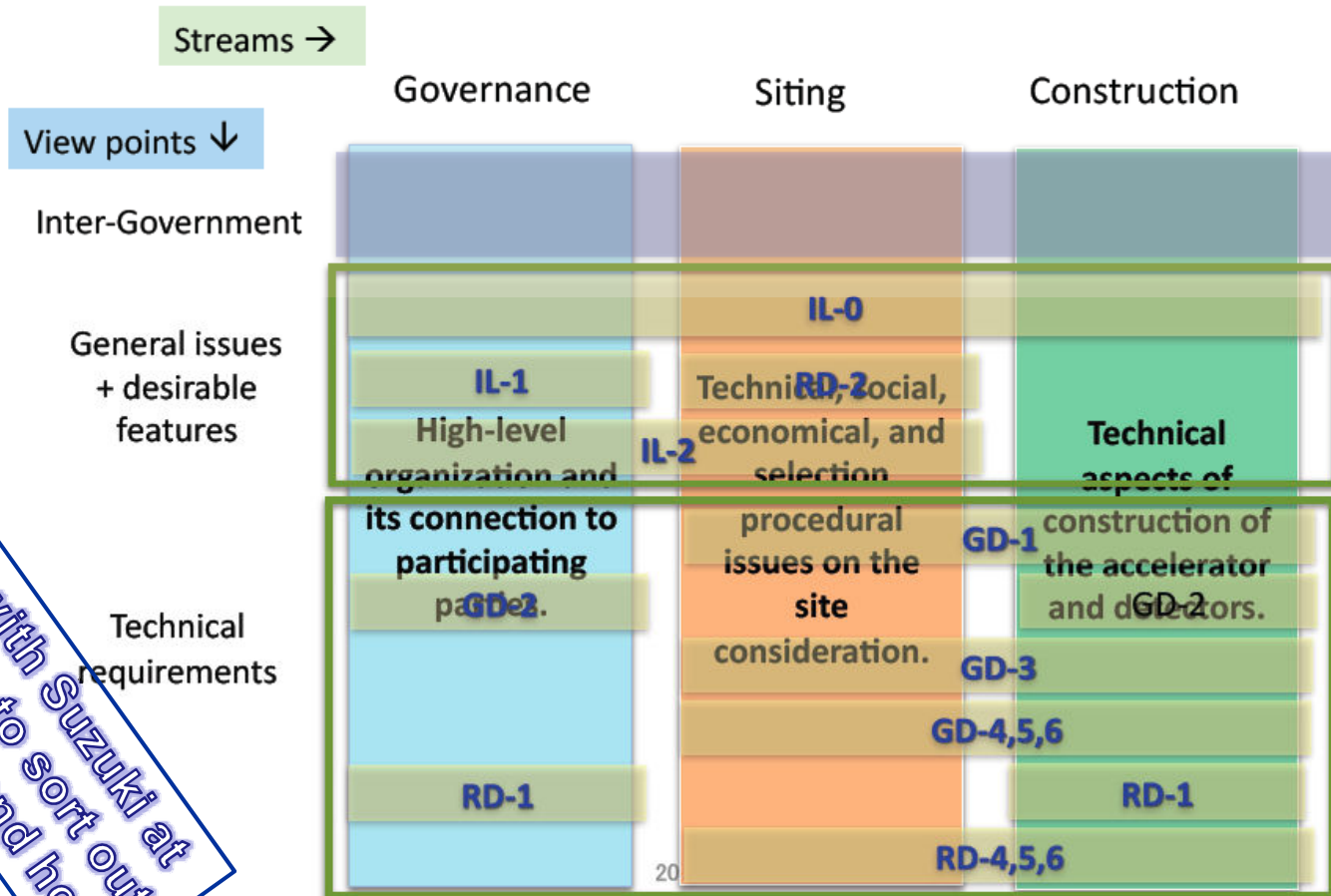


# Suzuki slides on governance

- A. Suzuki could not attend – sent slides, e.g.:

How we organize this work

– Three Streams and Work Packages –



Meeting with Suzuki at Albuquerque to sort out who does what and how



## Summary (*at ILCSC*)

- GDE is learning a lot and trying to assimilate what it has learnt.
- We can produce an interim report on the time scales promised to EU and in time for Paris ICHEP.
- What role does ILCSC/ICFA want/need to play in this work? We believe that we need you to be fully engaged.
- Parallel developments at CERN very important – not only Membership group – also studies to internationalise CLIC.
- Buy-in from funding agencies via FALC vital. Currently they give passive “approval” = tolerance?

We have to have a COHERENT & DYNAMIC approach to all these questions.



## Regional Dir. visits

- On June 9<sup>th</sup> visited B. Vierkorn-Rudolph in Bonn.
- Useful discussions. Explored Germany attitude to governance activities – no problems.
- Agreed that DESY effort relating to using X-FEL developments for ILC very positive. Content with current DESY effort but not for it to grow at moment.
- Rather negative on possibility of BMBF funding ILC work at Dubna.



# Activity from Brussels

- Commission legal framework for European research infrastructures (ERIC) now accepted – VAT will not be charged.
- This legal framework is very Euro-centric and not easy to adapt to projects where Europe is not dominant partner.
- “Ramiri” symposium in London, Grenoble, Hamburg. Rather interesting talks generally on large infrastructure projects.



## ILC in UK

- PPAP meetings and current status of CLIC  
Sol and relevant matters will be reported on by PB next.
- RG round now “complete” ..... held up until Council meeting going on yesterday and today – watch this space!
- P. Warry has now gone. New chair of STFC is Sir Michael Stirling, who was VC of Birmingham and is an electrical engineer.



# ILC in Asia

- Still problems in Korea, where central PP institute has been dissolved and overall science policy still unclear with new government. The next PAC will be in Pohang so maybe we will learn more then.
- In Japan, KEK recently had two very large “stimuli” which has resulted in spikes in the ILC budget. However these are expected to be transients on a fairly flat, hopefully slowly rising budget.
- Next FALC meeting will be in India.





# ILC in USA

- OHEP President's budget

## High Energy Physics Funding Profile by Subprogram

(dollars in thousands)

	FY 2008 Current Appropriation	FY 2009 Original Appropriation	FY 2009 Adjustments	FY 2009 Current Appropriation	FY 2009 Additional Appropriation <sup>†</sup>	FY 2010 Request
<b>High Energy Physics</b>						
Proton Accelerator- Based Physics	371,680	410,343	-7,863 <sup>b</sup>	402,480	+107,990	442,988
Electron Accelerator- Based Physics	57,206	48,772	-17,789 <sup>b</sup>	30,983	+1,400	26,420
Non-Accelerator Physics	75,784	86,482	+14,389 <sup>b</sup>	100,871	+4,445	99,321
Theoretical Physics	60,032	63,036	+1,768 <sup>b</sup>	64,804	+5,975	67,240
Advanced Technology R&D	138,143	187,093	+9,495 <sup>b</sup>	196,588	+112,580	183,031
<b>Total, High Energy Physics</b>	<b>702,845<sup>cd</sup></b>	<b>795,726</b>	<b>—</b>	<b>795,726</b>	<b>+232,390</b>	<b>819,000</b>



## ILC in USA

- The FY10 president's budget of \$819M for OHEP has been passed by the House. This the same as the presidential (FY09 + 2%). The Senate passed \$813M in July.
- “ LHC slow pace of the restart calls budget need into doubt” - DOE should improve communication with CERN.
- There is no serious news about FY11- look for the Science doubling scenario
- It is just possible that there might not be a CR this year with both the House and the Senate ready before August.



# ILC in USA

- Budget guidance from OHEP: use \$35M to develop an FY10 baseline. D. Kovar will try to see if he can provide cost-of-living (\$1.5M MH, \$0.5M DK). In view of this \$34M will be allocated and \$1M held in contingency
- First strawman budget is close – Fermilab draft exists, SLAC Aug 6th, Cornell Aug 11th, ANL in progress, LBL draft exists, BNL draft exists, LLNL not yet



# FY10 Strawman

<b><u>\$ in Millions</u></b>	<b><u>FY09 Current</u></b>	<b><u>FY10 Presidents Request</u></b>
<b>GDE &amp; Management</b>	<b>4.8</b>	<b>5.0</b>
<b>Electron Sources</b>	<b>0.9</b>	<b>1.3</b>
<b>Damping Rings/E-cloud</b>	<b>2.5</b>	<b>3.1</b>
<b>Accelerator Physics</b>	<b>1.6</b>	<b>1.9</b>
<b>Beam Delivery Systems</b>	<b>4.5</b>	<b>4.3</b>
<b>CFS</b>	<b>1.0</b>	<b>1.5</b>
<b>Global systems</b>	<b>1.7</b>	<b>1.5</b>
<b>RF Systems</b>	<b>6.1</b>	<b>6.1</b>
<b>Cavities &amp; Cryomodules</b>	<b>10.2</b>	<b>9.5</b>
<b>Reserve</b>	<b>1.6</b>	<b>0.9</b>
<b>TOTAL</b>	<b>35.0</b>	<b>35.0</b>



# Summary and Outlook

- Good progress in R&D – more or less keeping up with milestones across R&D plan.
  - US funding now MUCH healthier. Significant upgrades from stimulus packages, although not for ILC explicitly.
  - Europe and Asia stable or increasing funding.
  - UK situation generally grim.
  - Next major meeting in Beijing, 26-30.3.2010.
  - Next after that (finally) back in Europe, 20-24.9.2010.
- Joint meeting with CLIC to be held in CERN



# Announcements

- Next LCUK meeting proposed at RAL on March 16<sup>th</sup> - meeting as current format – SC meeting evening before.

M. Stanitzki invited to attend SC as S. Worm will move to CERN.