Concluding Remarks

KILC 12

Inter-burgo EXCO
Daegu, Korea

April 26, 2012

Won Namkung
Pohang Accelerator Laboratory (PAL)
Pohang University of Science and Technology (POSTECH)

- *Looking back:*

  - Pre-ILCSC Era (~ 2001)
  - ILCSC- GDE Era (2002 ~ 2013)

- *Changes in Asia*

- *Post-ILCSC Era (2013 ~)*

- ***Pre-ILCSC Era (1980s ~ 2001)***

  - *SLAC chose X-band LC in 1983*

  - *KEK (X-band), DESY (S-band => SC L-band), CERN (Two-beams at 30 GHz)*

  - *Two Reports on International Linear Colliders (G. Loew, 1995 & 2001)*

- ***ILCSC/GDE Era (2002 ~2013)***

  - *ILCSC established by ICFA (M. Tigner, 2002)*
  - *Technology Recommendation by ITRP (B. Barish, 2004)*
    - *1st ILC Workshop at KEK (Nov. 2004)*

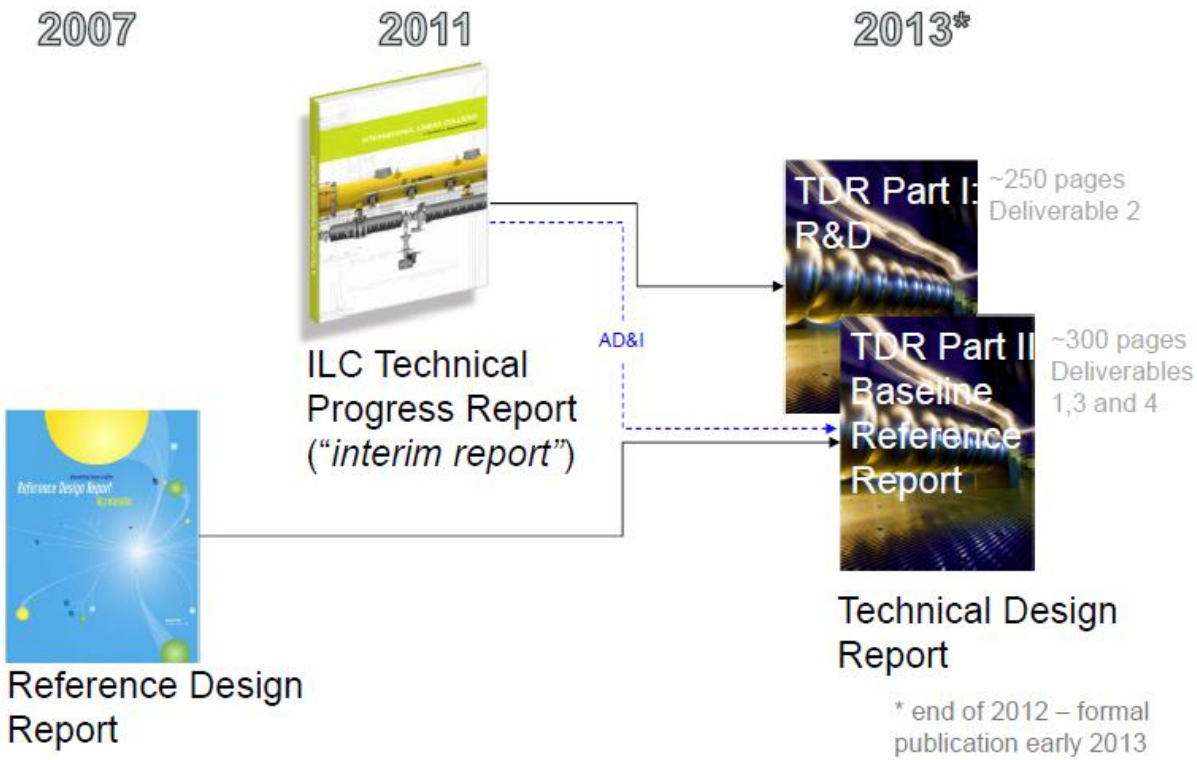
  - *GDE established by ILCSC (B. Barish, 2005)*
    - *Workshops at Snowmass, Valencia, ……*
    - *RDR (2007) and Interim Report (2011)*

[Preliminary LHC results on Higgs, 2012]

- *TDR to be completed (2013)*

Global Design Effort

Director's Report



Barry Barish

KILC12

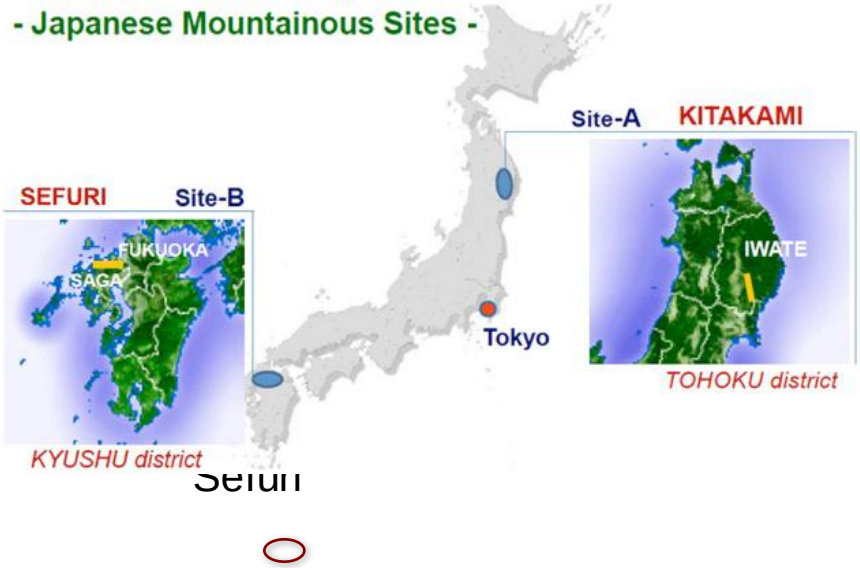
Daegu, Korea

23-April-12

- ***Changes in Asia: Asia will play its role in new framework of LC***

Japan Interests in Hosting ILC

Japanese Premiere Minister Noda
December 15, 2011



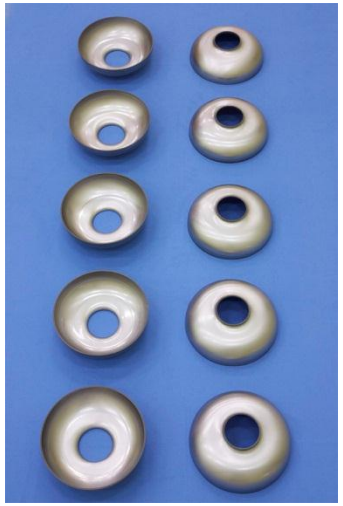
- the ILC is the project that Japan should promote as a national commitment
- To build the world science center in Japan
- Science research is not only about technology and science, but also contri butes to the culture and mentality of the citizens


Quest for Birth-Evolution of Universe
International Linear Collider (ILC)
Quest for Unifying Matter and Force
Scientific Activities
Technology Innovation
Talented Human Resources
Lepton CP Asymmetry
Beyond Standard Physics
Beam Power-Upgrade
J-PARC
Operation Power-Upgrade
LHC
SuperKEKB
KEK-B
Quark CP Asymmetry
Lepton
Quark
[Origin of Matter]
Quest for Neutrinos
Quest for 6 Quarks
[Origin of Force]
Higgs Particle [Origin of Mass]

Cavity Fabrication Facility (factory model)

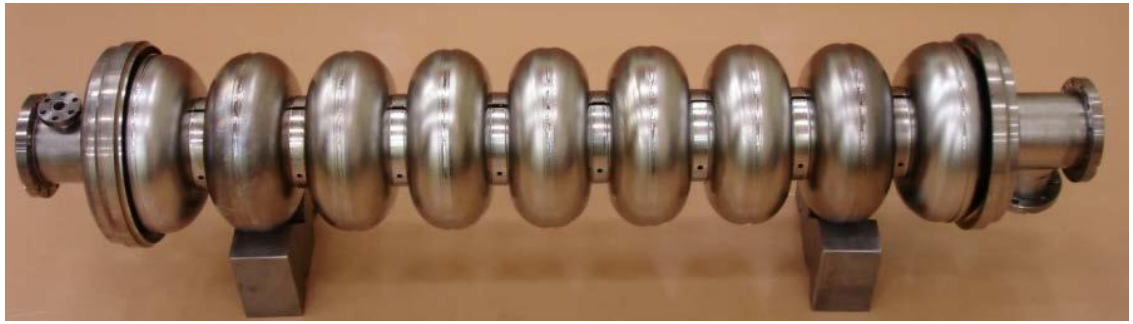
Press machine

Dumbbell



EBW machine

◆ KEK-00 (Press : KEK, EBW : job shop) finished on Jan. 31, 2012.



◆ KEK-01 (Press : KEK, EBW : KEK)

ATF2 International Collaboration

2010年 10月 19日 火曜日

News from Chinese MOST

On Jan. 21, 2012, Chinese MOST launched to public the formal procedure for China's participation in large scale international collaboration (i.e. ILC)

Translated from the Chinese version of the Guidelines released on Jan. 21th, 2012 by the Ministry of Science and Technology of the People's Republic of China

Guidelines for the Domestic Arguments on China's Participation in Large International Science Projects and International Research Programs

(Trial Run)

1. Significance and Feasibility Analysis of the Large International Science Projects or International Research Programs (abbr. LIPP)

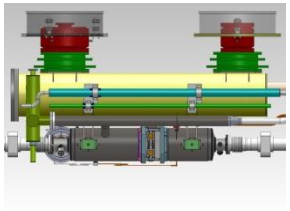
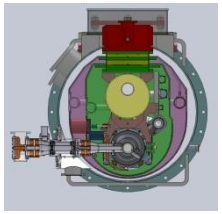
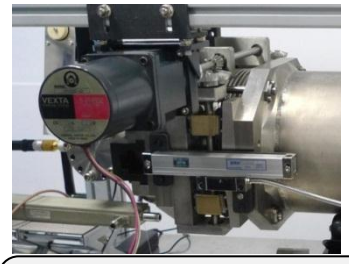
1.1 List one or more scientific fields involved in the LIPP.

1.2 List the scientific objectives and technical specifications of the LIPP.

1.3 List the significance of the LIPP for the development of relevant scientific and technical fields.

http://www.gov.cn/gzdt/2012-01/21/content_2050572.htm





Frequent visit to all the Labs
>10 person-month / year

IHEP ILC 1.3 GHz SCRF
International Collaboration

IHEP-KEK ILC SRF Webex
meeting every month

Region	Cavity development: fabrication, process and test	Cryomodule assembly/test	Linac beam test centres (beam on date)
Americas	Three industrial partners, and Fermilab/ANL, JLab and Cornell	Fermilab/SLAC	ILCTA–NML (2012)
Asia	Three industrial partners, and PKU, IHEP and KEK	KEK / IHEP	Quantum-Beam/STF-2 (2011/2013)
Europe	Two industrial partners and DESY and IHEP	CEA-Irfu/CNRS-LAL/DESY for FLASH and E-XFEL	FLASH (from 2005)

IHEP-01(2011)

IHEP-02 (2012)

超导加速组元

IHEP-03 (2013)

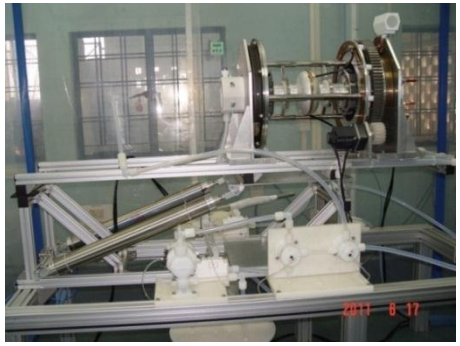
IHEP-01(2010)
IHEP-03(2013)

PXFEL1
58 Cryomodule

Infrastructure for SCRF Cavity Fabrication and Processing at RRCAT, Indore

- 120 T cavity forming facility
- Electro-polishing setup for 1.3 GHz
- Centrifugal barrel polishing machine for 1.3 GH z single cell cavities
- High pressure rinsing

Cavity forming facility installed



Electro-polishing setup d eveloped

Centrifugal barrel polishing machine developed

High pressure rinsing S et up developed

- Electron beam welding machine (15 kW) and a vacuum annealing furnace are under proc urement. These are expected to be installed by December 2012

Current Accelerator Activities in Korea (2012)

PLS-II

PAL-XFEL

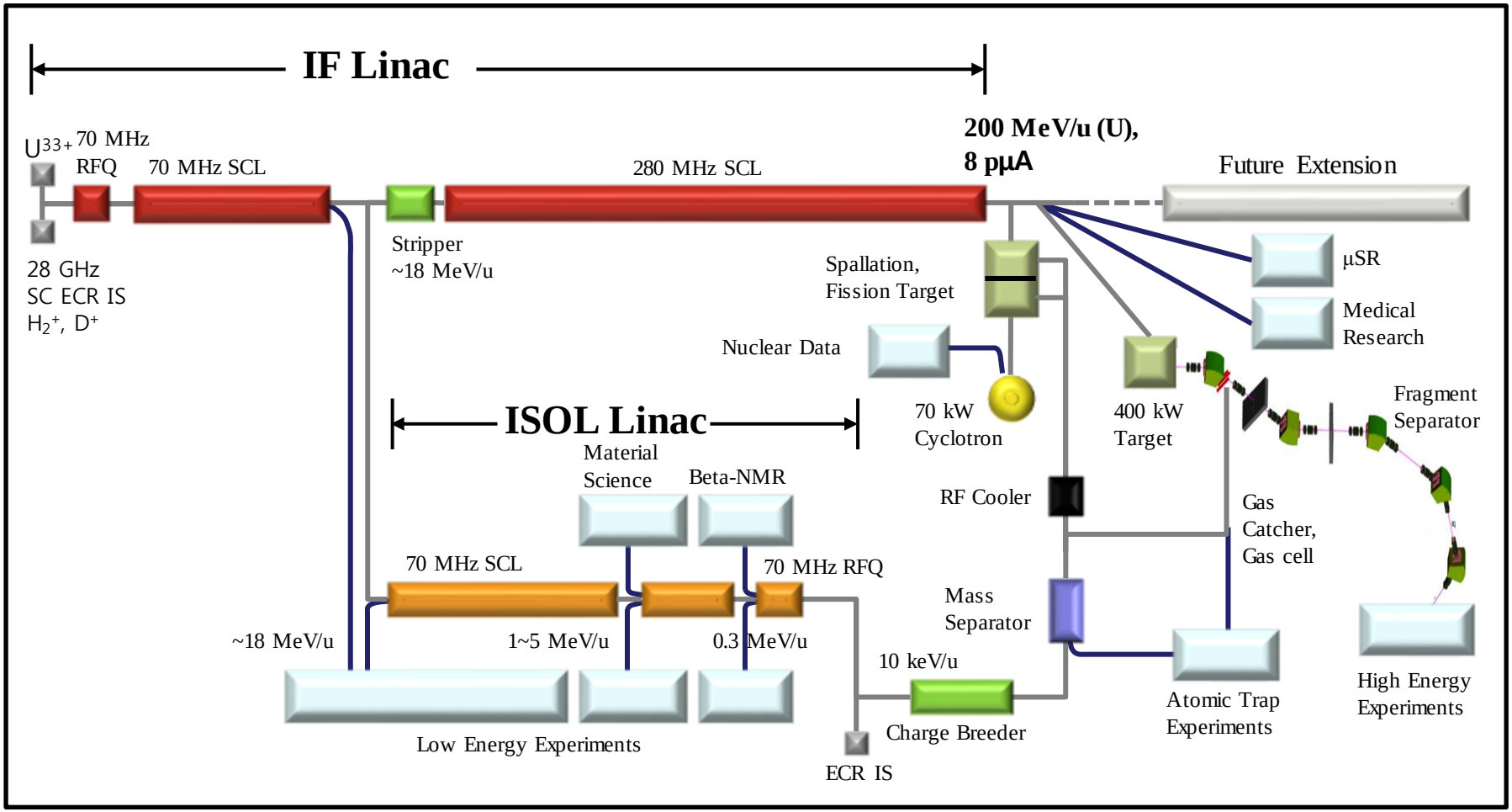
KoRIA

KHIMA

PEFP

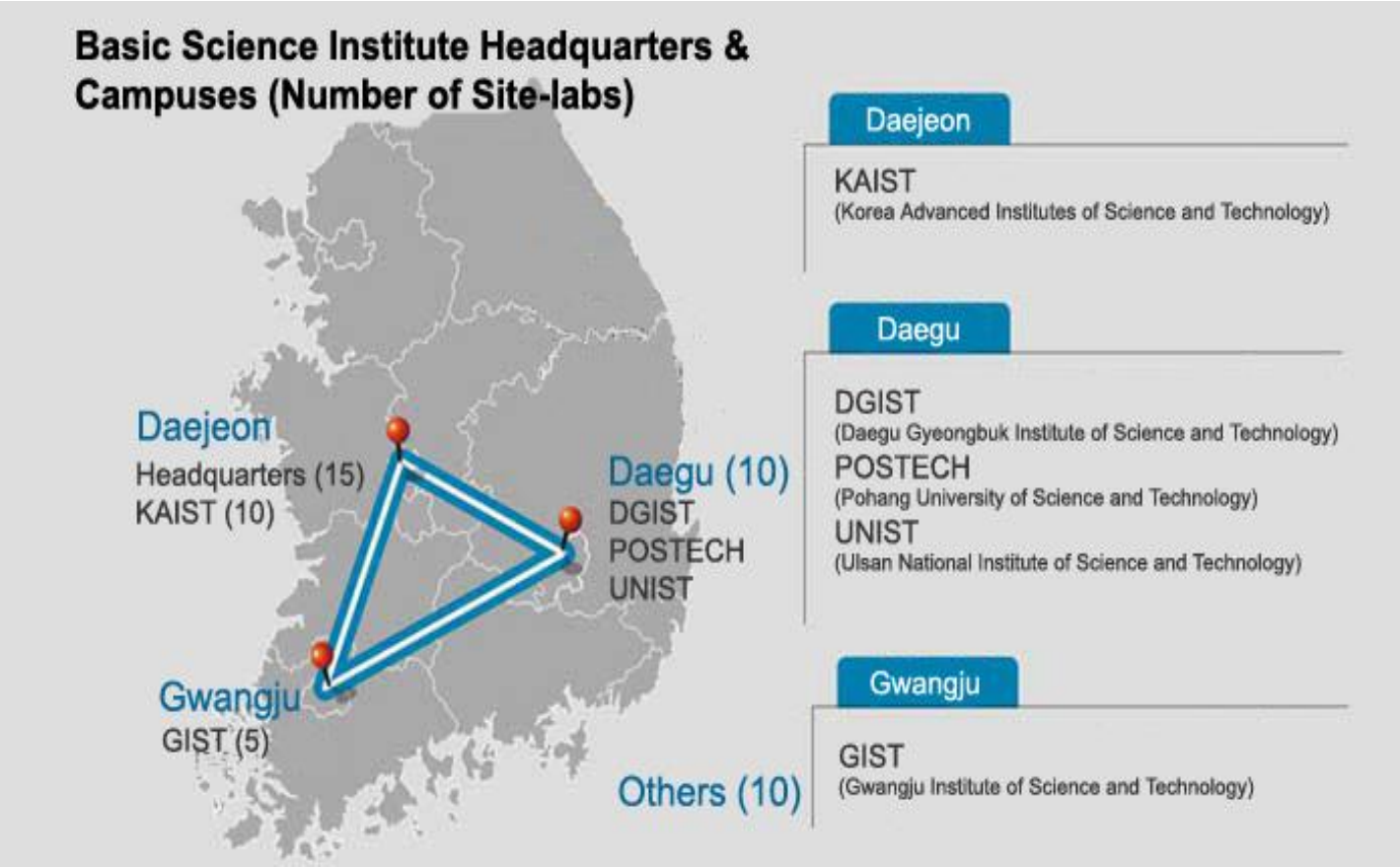
Schematic Diagram of KoRIA

For the basic and applied science with stable and unstable isotopes



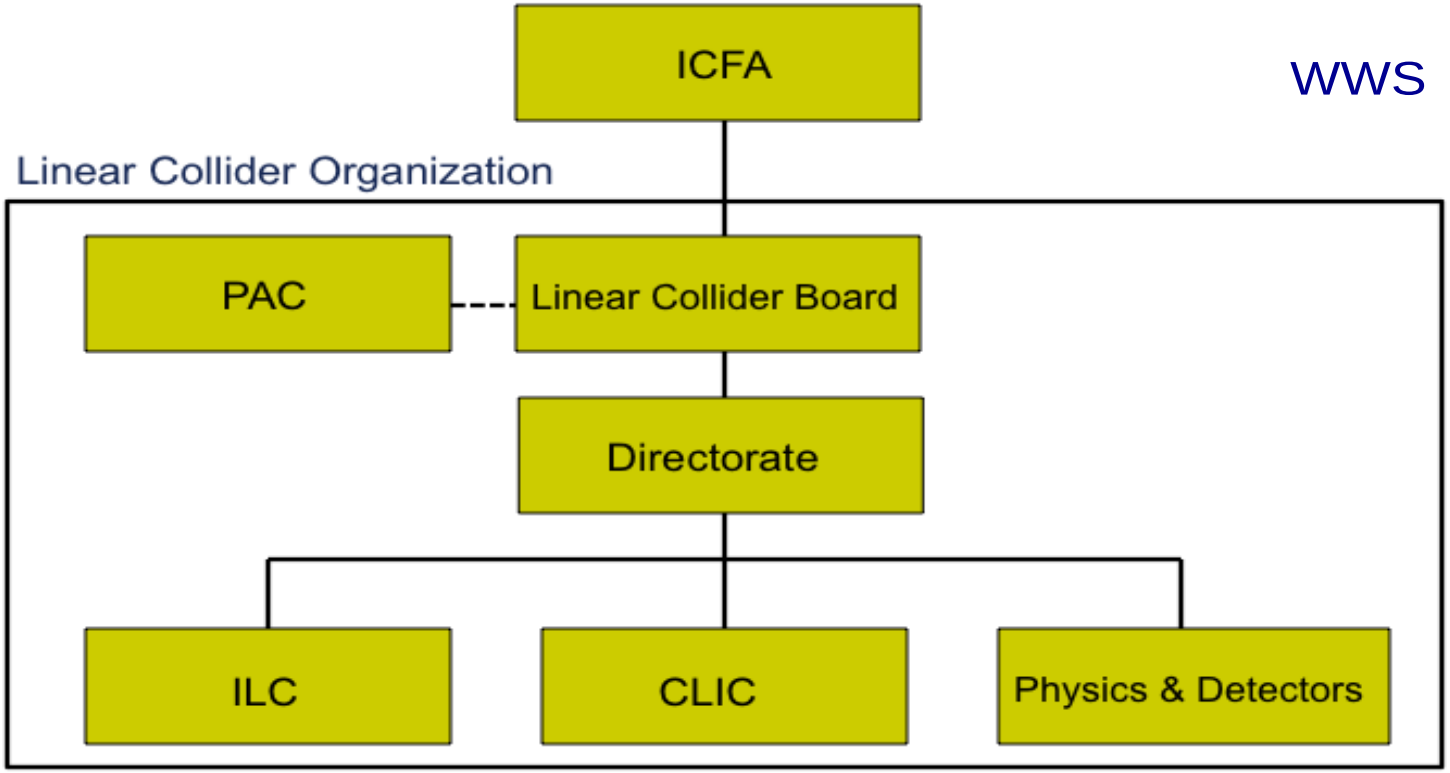
ISOL: Isotope separation on line , IF: In-flight fragmentation

Institute of Basic Science (IBS): Established in 2011



- ***Post-ILCSC Era (2013 ~)***

Possible Organization



Extending the reach of the ILC

- ICFA LC Parameters subcommittee (2003 and 2006)

The strong likelihood that there will be new physics in the 500 – 1000 GeV range means that the upgradeability of the LC to about 1 TeV is the highest priority step beyond the baseline.

- The energy of the machine should be upgradeable to approximately 1 TeV.
- The luminosity and reliability of the machine should allow the collection of order of 1 ab^{-1} (equivalent at 1 TeV) in about 3 to 4 years.
- The machine should have the capability for running at any energy value for continuum measurements and for threshold scans up to the maximum energy with the design luminosity ($\sqrt{s}$ scaling assumed).
- Beam energy stability and accuracy should be as stated for the baseline machine.

Post-TDR ILC Interim Goals & Organization

- What should follow GDE (mandate and organization) for an interim 3-5 year period? (ILCSC – Bagger)

- GDE position paper submitted to ILCSC Aug 2011. The paper addresses:
  - Technical Goals proposed for 2012+ program?
    - Value engineering; Continued system demonstrations; Increasing energy reach; +
  - Organizational Issues for 2012+ post GDE?
    - What are primary GDE assets that should be preserved?
    - What are the primary GDE weaknesses that should be improved?
- FALC common fund budget for GDE is to complete mandate in mid-2013.

In summary,

- GDE/ILCSC accomplished excellent job with hard work

- GDE/ILC is a bottom-up project (vs. ITER as top-down)

- Mega-science needs consensus, consensus, consensus…
(local, national, and international levels)

- ***There are strong interests in ILC, especially in Asian region***

- ***Looking forward to seeing ILC construction in this decade,***

Thank you very much, especially, for *ILC* Newsline !!

AROUND THE WORLD

Doing the cryomodule shuffle

Fermilab completes CM1 run, soon to install CM2

by Leah Hesla

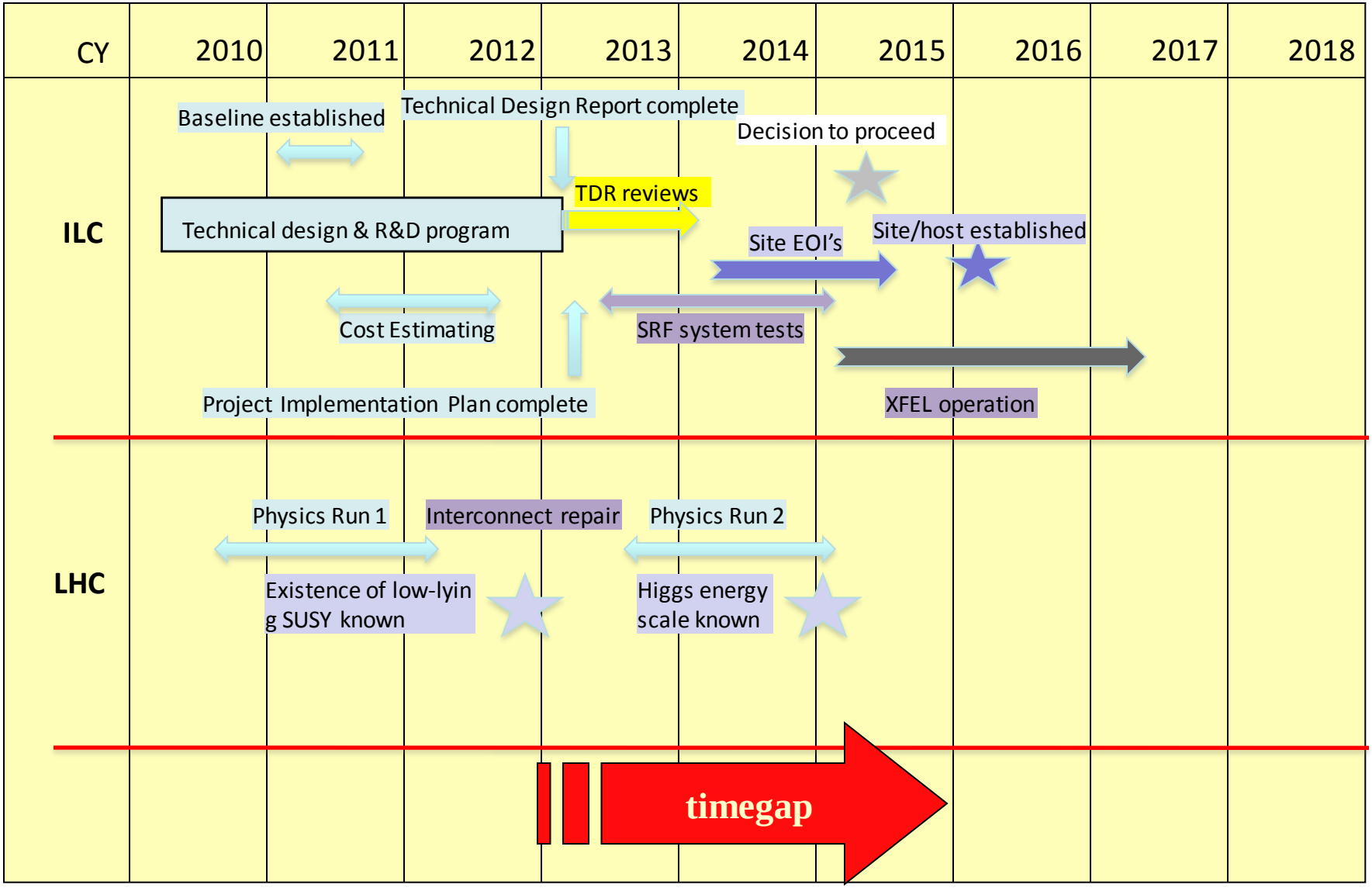
Out with the old, in with the new! Having completed a successful run of tests on Cryomodule 1, Fermilab researchers remove it from its current home and install Cryomodule 2. The new device's components have shown promise, and with the experience from the earlier cryomodule brought to bear on the next, the team hopes to realise the ILC gradient goals at Fermilab before long.

Acknowledgements

Thanks to authors
at
KILC12
for
providing their materials

EXTRAS

ILC possible timeline



GDE Conclusions

- The major R&D milestones for TDR are in-hand
- The TDR will be a self-contained comprehensive R&D report; with a design based on new baseline; a new value costing; and a section on project implementation planning
- Submit: Dec 2012; Reviews of technical design & costs; rewrite as needed; submit to ICFA at LP2013 in June 2013 **(GDE mandate complete)**
- Envision post–TDR ILC program: 1) extend energy reach; 2) systems tests; 3) evolve design based on technology development and LHC results (eg. Higg's Factory?)

ILCSC

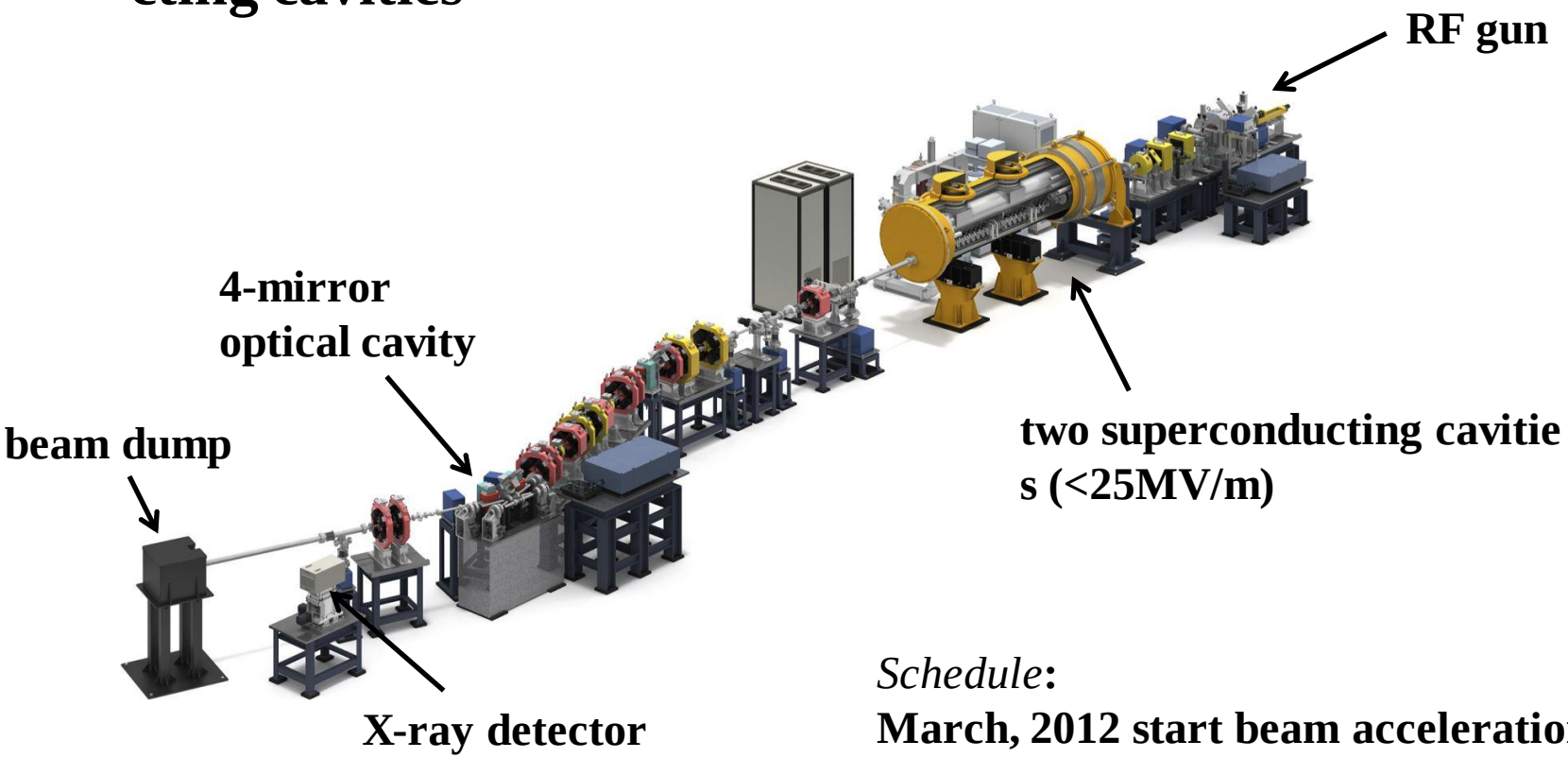
- The ILC faces the immediate challenge
  - The ILCSC, the GDE and the RD will disappear with the delivery of validated TDR/DBD in 2013
    - Their mandates will have expired – but their job will not be done. It will still be necessary to
      - Advance the SCRF R&D and industrialization
      - Complete the system tests
      - Further the accelerator design and integration
      - Continue detector R&D
  - What will take their place?

IFCA

- ICFA will endorse this proposal in July
  - It was discussed extensively this winter in Oxford
  - ICFA has empowered the ILCSC to speak for the new Linear Collider Board until it is inaugurated
    - To that end, ICFA has extended the ILCSC mandate until mid 2013
  - Likewise, ICFA has empowered the GDE to speak for the post -GDE LC (SCRF) organization
    - ICFA has also extended the GDE and RD mandates

QB Technology Program (2008-2012)

- **Demonstration of compact X-ray source using supercondu cting cavities**

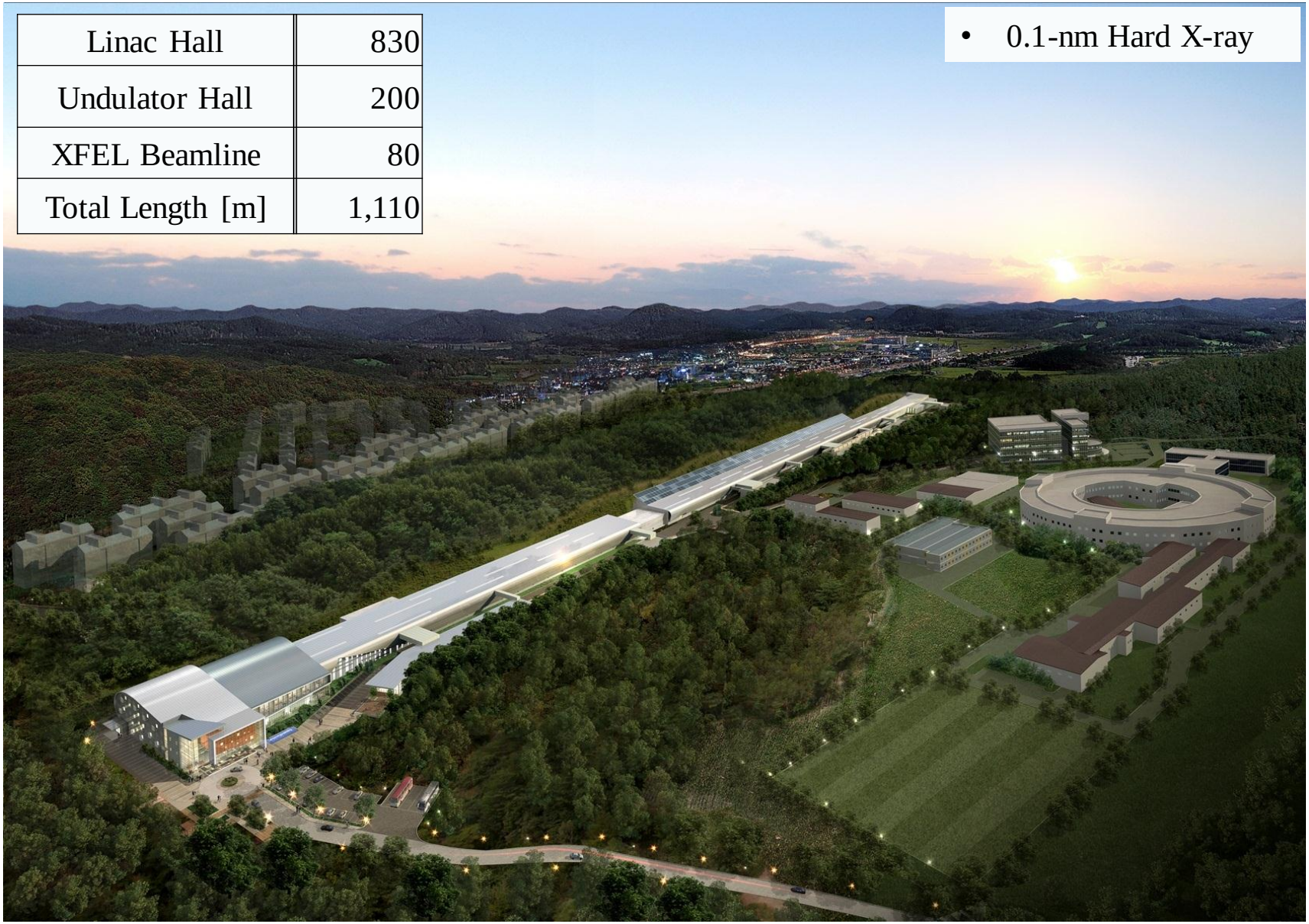


Schedule:
March, 2012 start beam acceleration
Autumn, 2012 collision with laser

10-GeV PAL-XFEL (2011 -2014)

Linac Hall	830
Undulator Hall	200
XFEL Beamline	80
Total Length [m]	1,110

- 0.1-nm Hard X-ray



Science and Technology Budget in Korea