European (& world) ILC Status

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Outline

- Tokyo meeting April 14
- AWLC14
- Status in US – before and after P5
- Japan news & timetable
- Summary

Tokyo meetings

- Tokyo meeting April 14

on site-specific issues. Lyn, BF & H. Weerts met leaders of Diet ILC Federation & MEXT Minister Tuchiya for > 1 hour discussion. All senior Japanese physicists present – H. Murayama translated.

- Much of the discussion related to government contacts with other governments & regions – mostly Europe. Agreed to send letter to CERN DG & R-J Smits – both from Diet members & MEXT. Both now sent (see later).

Tokyo meetings

- Also discussion on necessity for significant budget either as supplementary budget or in next fiscal year for preparatory work at designated site.
- It seemed that this discussion was positive and that the MEXT minister nodded his head – but the reality of making budget submission in time in the context of strong reductions in KEK's budget for other things is not simple. A. Yamamoto is working on this but time is very tight.
- While we were in Fermilab, Odoi-san was visiting France and had discussions with CNTS, CEA & Ministry.

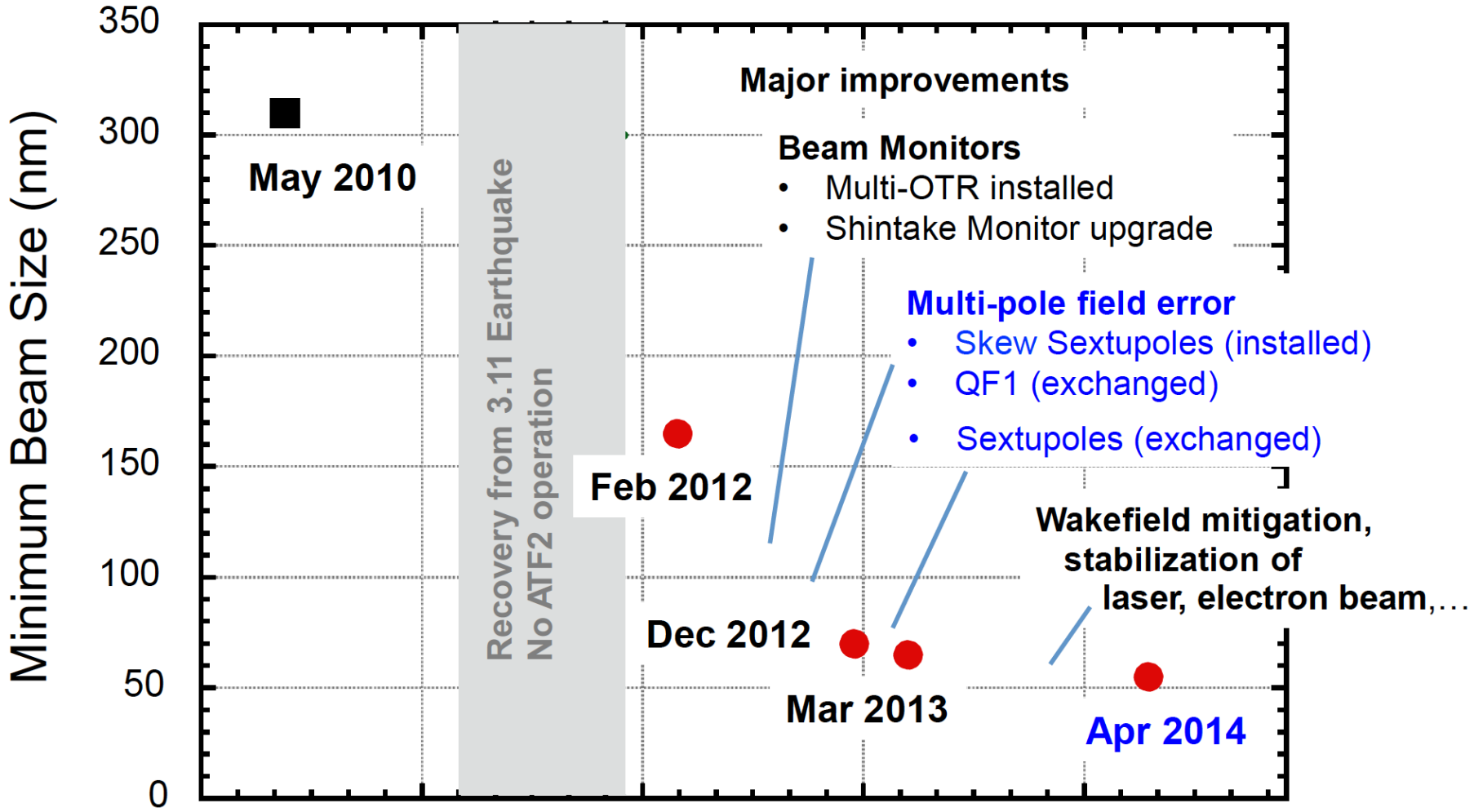
AWLC14 – Highlights

- **For me highlights were on technical side not political –**

Very impressive work in a number of areas – High-Q cavities at Fermilab, test of Fermilab cryomodule, progress with XFEL, cavities, beam size at ATF2….

Highlights

History of ATF2 minimum beam size



The Good News or the Bad News?

Abid Patwa view from DoE

High Energy Physics Budget Highlights (I)

- **Research and Facilities Operations:**
  - **Energy Frontier: LHC data taking resumes in 2015**
    - The U.S. will continue to play a leadership role in LHC discoveries and is actively engaged in the initial upgrades to the LHC detectors
  - **Intensity Frontier: The Fermilab program continues its evolution as the leading accelerator facility on the intensity frontier**
    - The newly completed NOνA detector begins taking physics data in FY 2015
    - Building several new experiments to access new phenomena that cannot directly be observed at the LHC
      - such as Mu2e, Muon *g*-2, and the MicroBooNE experiments
  - **Cosmic Frontier: Advance our understanding of dark matter and dark energy**
    - The recently-commissioned Dark Energy Survey continues its five-year mission, looking for the subtle effects of dark energy in shaping the evolution of universe
      - this search will be significantly extended in the future by the Large Synoptic Survey Telescope (LSST) now under construction
    - The search for dark matter will enter new territory with R&D and design of selected next-generation dark matter detector technologies that can advance this field by an order of magnitude in sensitivity

Abid Patwa view from DoE

FY 2015 High Energy Physics Budget

(dollars in thousands)

Description	FY 2013 Actual	FY 2014 Enacted	FY 2015 Request
Energy Frontier	149,446	154,687	153,639
Intensity Frontier	274,412	275,043	251,245
Cosmic Frontier	80,063	99,080	101,245
Theory and Computation	66,398	62,870	58,850
Advanced Technology R&D	142,291	122,291	114,242
Accelerator Stewardship	3,132	9,931	19,184
SBIR/STTR	0	21,619	20,595
Construction (Line-Item)	11,781	51,000	25,000
Total, DOE High Energy Physics	**727,523** [a,b]	**796,521**	**744,000**
DOE Office of Science (SC)	4,681,195	5,066,372	5,111,155

SBIR = Small Business Innovation Research
STTR = Small Business Technology Transfer

[a] The FY 2013 Actual is reduced by $20,791,000 for SBIR/STTR.
[b] FY 2013 Actual reflects sequestration.

Abid Patwa view from DoE

HEP Physics Funding by Activity

(dollars in thousands)

Funding (in $K)	FY 2013 Actual	FY 2014 Enacted	FY 2015 Request
Research	**361,766**	**370,447**	**352,227**
Facility Operations and Experimental Support	**265,123**	**276,561**	**264,208**
Projects	**100,634**	**127,894**	**106,970**
Energy Frontier	3,000	12,000	15,000
Intensity Frontier	63,494	37,000	24,970
Cosmic Frontier	19,159	24,694	41,000
Theory and Computation	3,200	3,200	1,000
Construction	11,781	51,000	25,000
SBIR/STTR	**0**	**21,619**	**20,595**
Total, DOE High Energy Physics	**727,523** [a,b]	**796,521**	**744,000**

[a] The FY 2013 Actual is reduced by $20,791,000 for SBIR/STTR.

[b] FY 2013 Actual reflects sequestration [~$748.3M with SBIR/STTR].

P5 Draft Executive summary

• “The interest expressed in Japan in hosting the International Linear Collider (ILC) is an exciting development. Participation by the U.S. in project construction depends on a number of important factors, some of which are beyond the scope of P5 and some of which depend on budget Scenarios. As the physics case is extremely strong, all Scenarios include ILC support at some level through a decision point within the next 5 years.”

In the unconstrained budget scenario:
“Play a world-leading role in the ILC experimental program and provide critical expertise and components to the accelerator, should this exciting scientific opportunity be realized in Japan”

- **Recommendation 11: Motivated by the strong scientific importance of the ILC and the recent initiative in Japan to host it, the U.S. should engage in modest and appropriate levels of ILC accelerator and detector design in areas where the U.S. can contribute critical expertise. Consider higher levels of collaboration if ILC proceeds.**

P5 Draft Executive summary

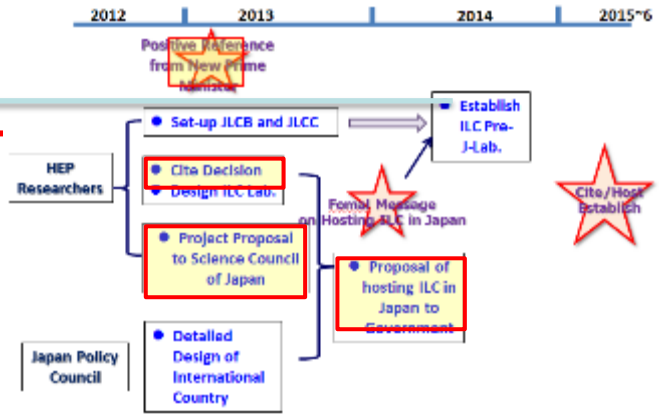
- Should the ILC go forward, Scenario C would enable the U.S. to play world-leading roles in the detector program as well as provide critical expertise and accelerator components.
  - The interest expressed in Japan in hosting the International Linear Collider (ILC), a 500 GeV e^+e^- accelerator upgradable to 1 TeV, is an exciting development.
  - Decisions by governments on whether or not to proceed, and the levels of participation, depend on many factors beyond the scope of P5; however, we emphasize most strongly that the scientific justification for the project is compelling.

P5 Draft Executive summary

Project/Activity	Scenarios			Science Drivers					Technique (Frontier)
	Scenario A	Scenario B	Senario C	Higgs	Neutrinos	Dark Matter	Cosm. Accel.	The Unknown	
Large Projects									
Muon program: Mu2e, Muon g-2	Y, Mu2e small reprofile needed	Y	Y					✓	I
HL-LHC	Y	Y	Y	✓		✓		✓	E
LBNF + PIP-II	Y, LBNF components delayed relative to Scenario B.	Y	Y, enhanced		✓			✓	I,C
ILC	R&D only	R&D, possibly small hardware contri-butions. See text.	Y	✓		✓		✓	E
NuSTORM	N	N	N		✓				I
RADAR	N	N	N		✓				I
Medium Projects									
LSST	Y	Y	Y		✓		✓		C
DM G2	Y	Y	Y			✓			C
Small Projects Portfolio	Y	Y	Y		✓	✓	✓	✓	All
Accelerator R&D and Test Facilities	Y, reduced	Y, some reductions with redirection to PIP-II development	Y, enhanced	✓	✓	✓		✓	E,I
CMB-S4	Y	Y	Y		✓		✓		C
DM G3	Y, reduced	Y	Y			✓			C
PINGU	Further development of concept encouraged				✓	✓			C
ORKA	N	N	N					✓	I
MAP	N	N	N	✓	✓	✓		✓	E,I
CHIPS	N	N	N		✓				I
LAr1	N	N	N		✓				I
Additional Small Projects (beyond the Small Projects Portfolio above)									
DESI	N	Y	Y		✓		✓		C
Short Baseline Neutrino Portfolio	Y	Y	Y		✓				I

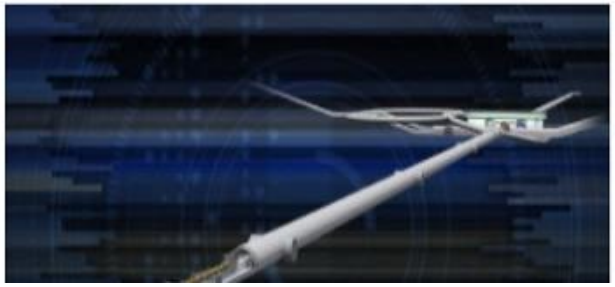
P5 Draft Executive summary

- **Establish ILC Pre-JLab.**



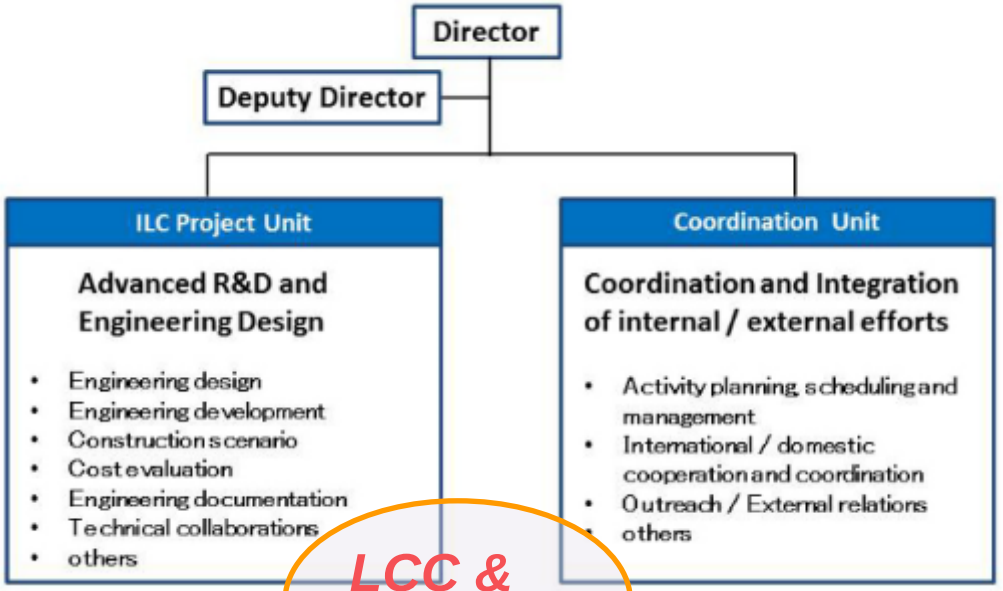
February 6, 2014

From KEK: KEK sets up Planning Office for the International Linear Collider



February

Tsukuba, 6 January 2014. KEK, Japan's High Energy Accelerator Research Organization, has set up a Planning Office for the International Linear Collider. The office will be headed by Atsuto Suzuki, Director General of KEK, and will oversee a broad range of activities required for realisation of the ILC, in addition to the ongoing efforts.

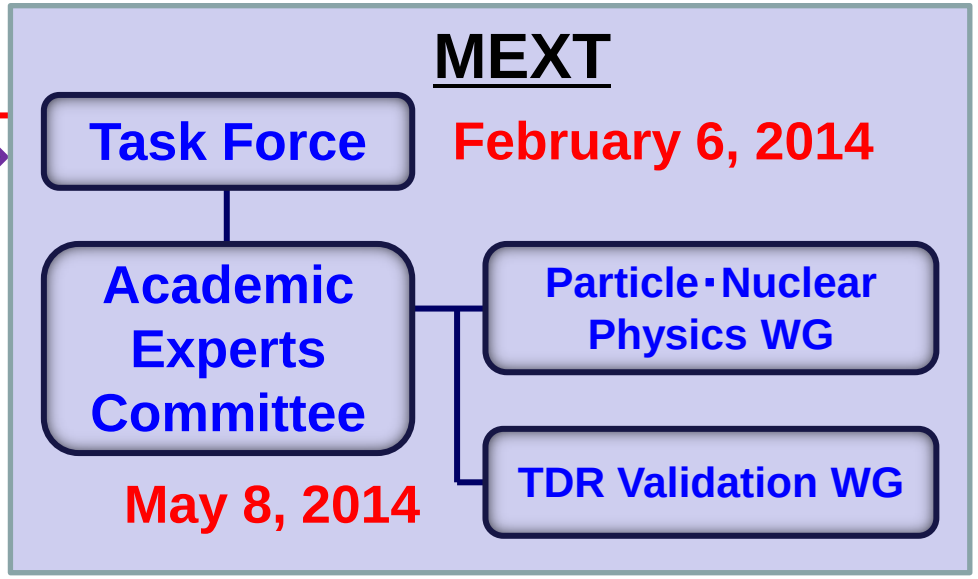


LCC & LCB

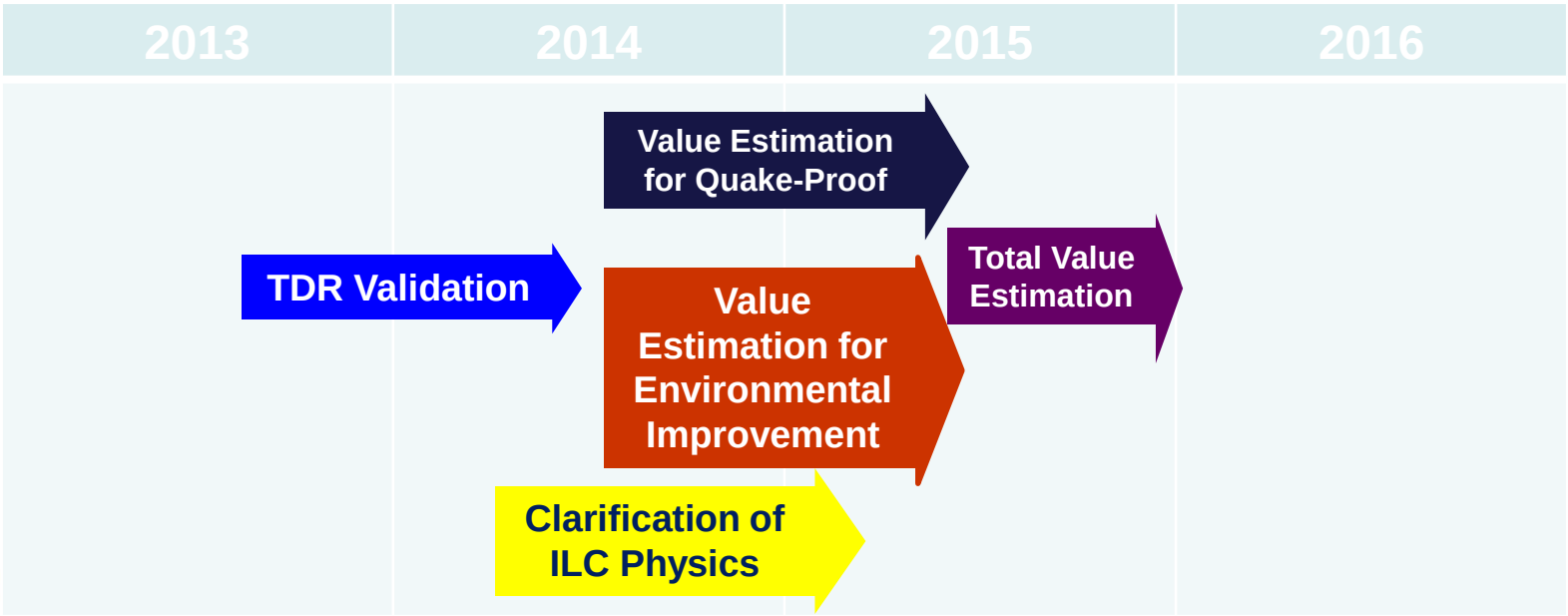
Japan Needs Years to Make Decision on ILC Building: Science Council Panel

Tokyo, Aug. 6 (Jiji Press)--Members of a Science Council of Japan panel agreed in prin
Tuesday that Japan should spend several years to examine the significance of leading the proposed
international project to construct
article accelerator.
After the day's closed-door meeting, University of Tokyo Prof. Yasuhiro Ie, head of the panel
reviewing
e are
uncertain el
ements to be removed before the panel gives the green light.
"It is yet to be known if the Japanese public will appreciate huge government spending for such a
basic scientific study despite Japan's severe fiscal condition," Ie said. He also expressed concerns
about possible cuts in outlays for other research field and difficulty securing more than 1,000
scientists and technicians for the project.
The ILC construction is estimated to cost 630 billion to 830 billion yen, half of which Japan is
asked to put up.
An international group of physicists proposed to build the linear collider in either the Kitakami
mountains in northeastern Japan or the Sefuri mountains in southwestern Japan.
(2013/08/06-23:28)

Review by Science Council of Japan



Review Issues

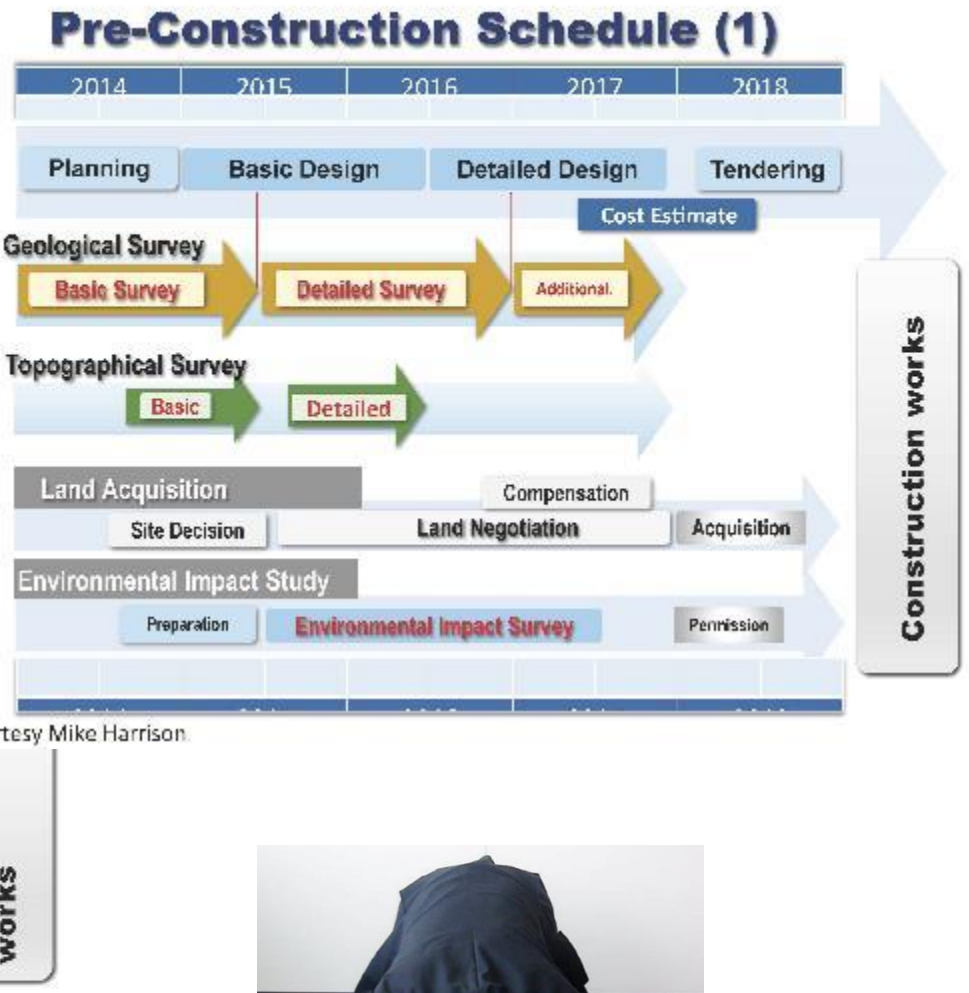


Further Action Plan before Construction

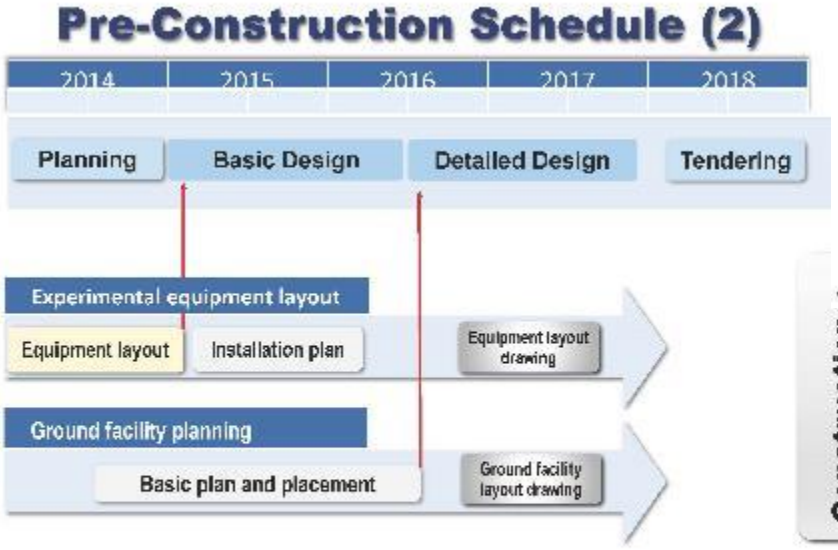
2014	2015	2016	2017	2018

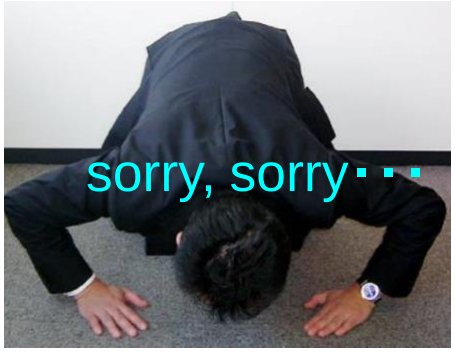
Engineering R&D Schedule *(LCC-PreLab)*

Pre-construction Schedule *(LCC-PreLab)*



courtesy Mike Harrison

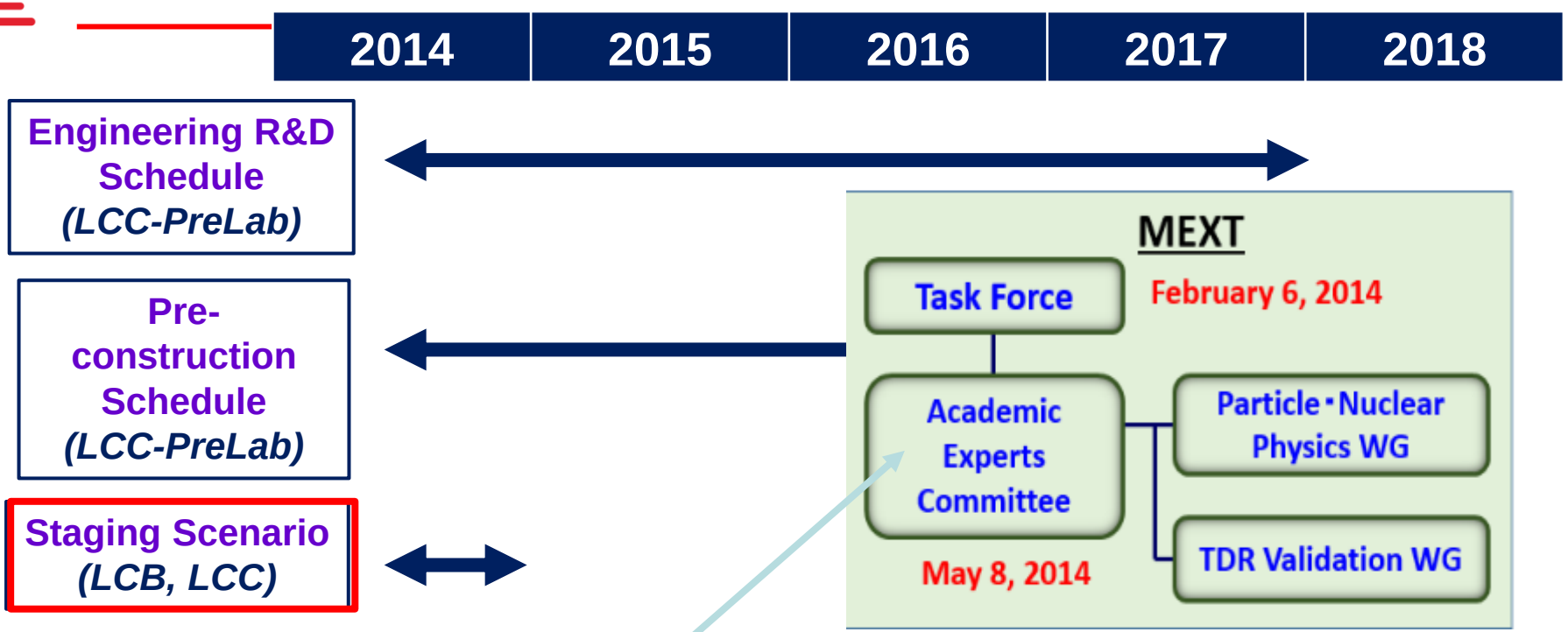


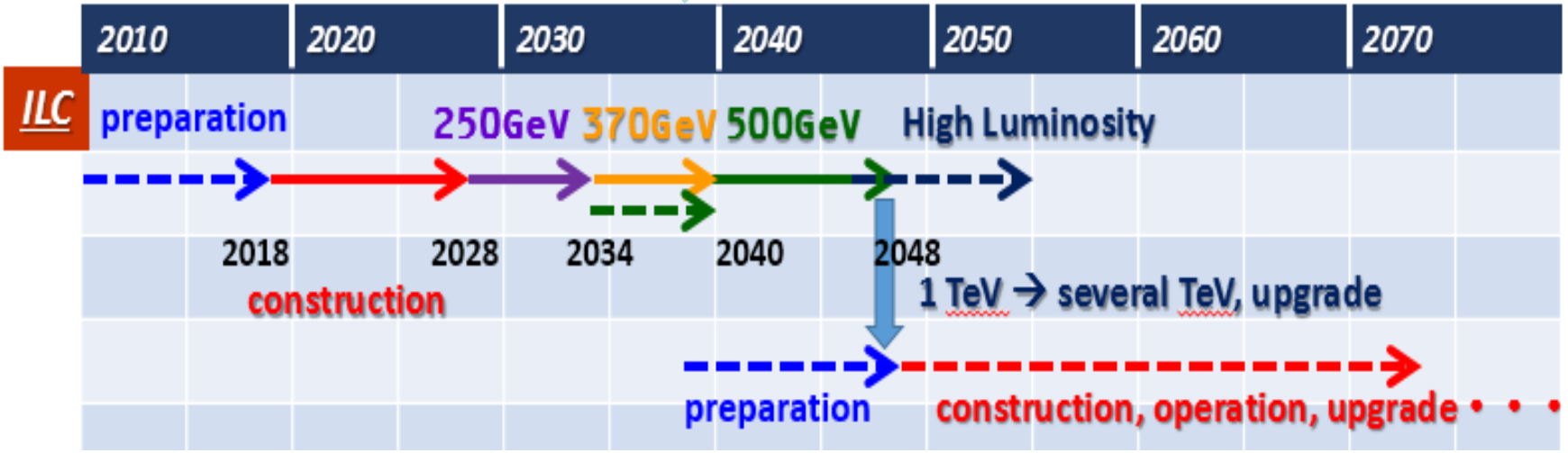


progress currently limited by funding

courtesy Mike Harrison

Further Action Plan before Construction





October 2012

March 2013

March 2013

April 2014

May 2014

Letter from

MEXT MINISTRY OF EDUCATION, CULTURE, SPORTS, SCIENCE AND TECHNOLOGY-JAPAN

Federation of Diet Members for the ILC
Room 302 (Office of Takeo Kawamura)
Second Members' Office Building of the House of Representatives
2-1-2 Nagata-cho, Chiyoda-ku, Tokyo 100-8962, Japan

to

CERN DG

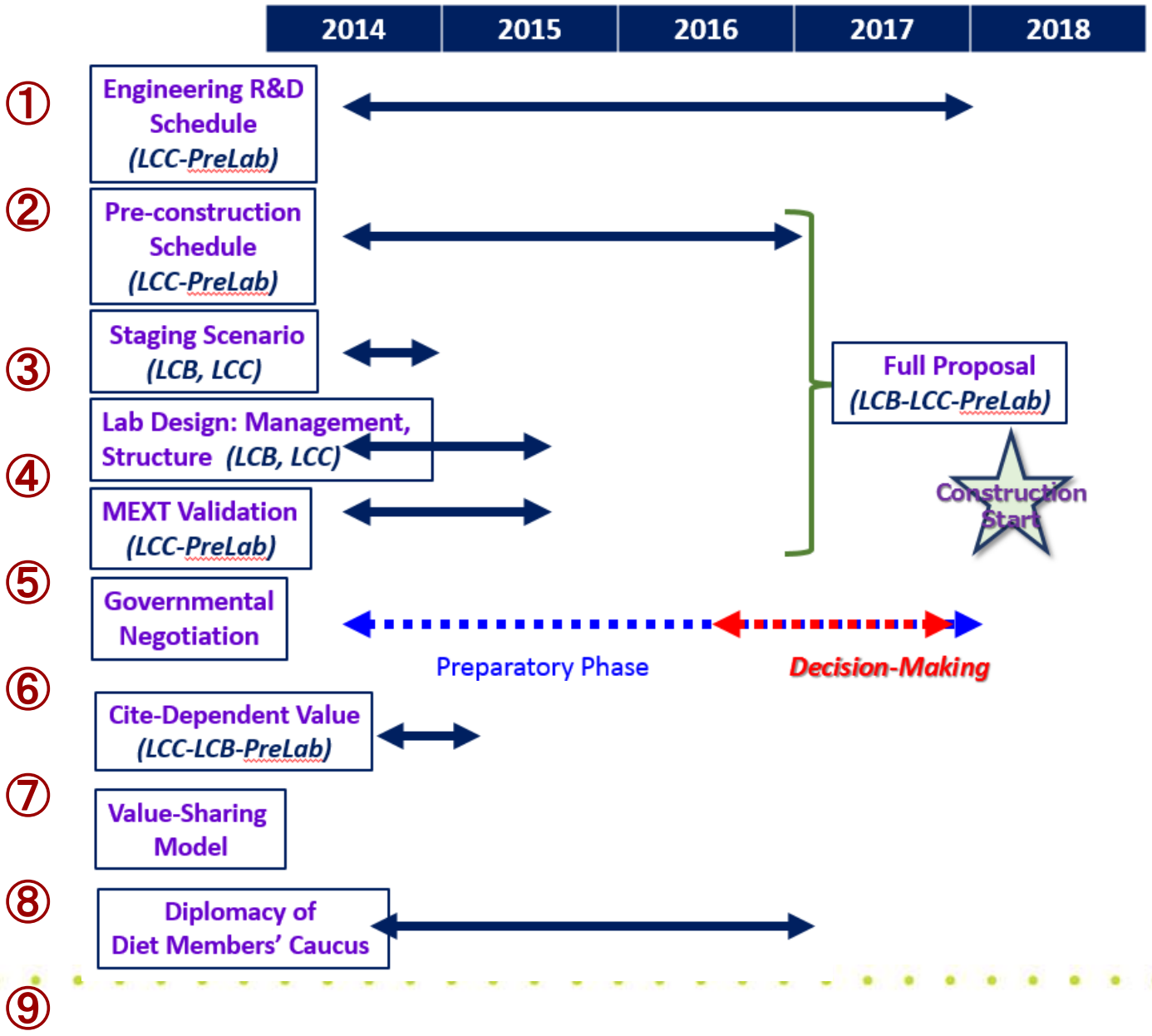
EU Government

June 2014

Meeting : France-Japan Friendship Diet Members' Caucus

3. Summary

Further Action Plan before Construction



ILC timeline (from BF December talk)

- 2013 - 2016
  - **Negotiations among governments**
  - **Accelerator detailed design, R&Ds for cost-effective production, site study, CFS designs etc.**
  - **Prepare for the international lab.**
- 2016 – 2018
  - **'Green-sign' for the ILC construction to be given (in early 2016)**
  - **International agreement reached to go ahead with the ILC**
  - **Formation of the ILC lab.**
  - **Preparation for biddings etc.**
- 2018
  - **Construction start (9 yrs)**
- 2027
  - **Construction (500 GeV) complete, (and commissioning start)**
    (250 GeV is slightly shorter)

Summary

• There is a feeling of steady progress in Japan on the political front, although the messages are mixed – bizarre to go into an ILC project with significant budget cuts for KEK.

• The P5 result, is VERY important. It was very clear about the Science case for ILC, which will be very reassuring for the Japanese. In all scenarios, it was recommended that there should be preparatory funding for ILC until a decision is made. If implemented by DoE, this will make an enormous difference.

• Getting a budget in Japan is also VERY important. Although the time scale is holding steady, all political pressures will be to push it backwards and to reduce the scope of the project.

• Lots of work to do, but we are certainly moving in the right directions and I am optimistic.