Status Report on ILC Project in Japan

Seiichi SHIMASAKI

Director, Office for Particle and Nuclear Research Promotion

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Contents

1. Review of Discussion Process
2. Reports by Working Groups

   WG1: Revisiting Scientific Merit of ILC (ILC-LHC)

   WG2: Evaluating TDR, especially the Cost estimates (Cost Profile)
3. Reports on Technological and Economic Impact Analysis
4. Discussion on Interim Report by the Special Committee
5. Schedule

1. Review of Discussion Process

Task Force
(Head: State Minister)

Special Committee
On ILC Project

Impact and Trend
Study by Contract

[Budget 1$=100\]
FY14: $0.5M (completed)
FY15: $0.5M (approved)

1st Meeting: May 2014
2nd Meeting: Nov. 2014
3rd Meeting: Apr. 2015
4th Meeting: Jun. 2015 (planned)

→ **Discuss Interim Report**

WG1: Revisiting
Scientific Merit

1st Meeting: June 2014
Held 8 Meetings
→ **Submitted WG Report to SC**

WG2: Evaluation of
TDR & Cost estimates

1st Meeting: June 2014
Held 6 Meetings
→ **Submitted WG Report to SC**

Based on SCJ's recommendations, Special Committee investigates critical issues required to judge hosting ILC or not.

Recommendations by Science Council of Japan

Executive Summary (September, 2013)

- *It is too early to grant the full-scale implementation of the ILC project in Japan at the moment.*
- *Before the final decision of whether the ILC should be hosted in Japan, following critical issues and concerns should be fully investigated and a clear vision for solutions should be provided.*

(critical issues to be investigated)

- A more precise research strategy for the ILC in view of the current LHC experiment
- A whole project cost profile for the construction, operation, upgrades and decommissioning
- Detailed plan of international cost-sharing
- Required human resources and management/operation organization
- A funding framework for ILC that is supported by the public

2. Reports by Working Groups
WG1: Revisiting Scientific Merit of ILC

- ILC could contribute to new physics beyond Standard Model by precision measurement of Higgs boson and top quark, and exploration of new particles.
- Based on the result of current LHC experiment, the best strategy and the appropriate energy scale for the ILC should be examined.
- Depending on the results of the current LHC experiment, the perspective of ILC in view of the search for new particles would be different. Meaning 500 GeV ILC might not be the best option.
- Around the end of 2017, it is expected that result of the current LHC experiment would be available with enough data accumulation.
- Since ILC Project requires humongous investments, appropriate international cost sharing should be clarified, and also understanding of the other science community is very important.
- It should be noted that failing to make a timely judgement could lead to losing global momentum for the ILC.

2. Reports by Working Groups (Cont.)
WG2: Evaluating TDR, especially the Cost estimates

- A total project cost estimate for the construction of the accelerator and detectors would be about $11B, and annual operation cost would be $ 490M.
- Costs for future upgrades and decommissioning are not included.
- Vendors' Mass production capability for the accelerator components needs to be enhanced. (Esp., Japanese vendors should learn more.)
- Quality control among several manufacturing site is a big challenge.

  ** Technology for each component is rather "matured," but manufacturing large number of same components with the same quality and ensure the total system performance after assembly would be rather "novel" challenge.*
- Securing enough talented human resources for construction, operation and management is crucial to the project.
- It is strongly recommended to analyze the perspectives and feasibility of securing enough human resources in Japan.

3. Report on Technological and Economic Impact Analysis

- MEXT conducted technological and economic impact analysis of the ILC project by the contract with Japanese consulting company.
- Economic impacts produced by construction and operation of the ILC was estimated.

  * Not including expenditure for preparation, infrastructure, or other site specific expenditure.

Results:

Based on the $21.1B final demands produced by the ILC project, possible induced production value would be $44.6B.

Assumptions:

(1) 10 years for Construction, and 10 years for operation

(2) Final demands is based on the Japanese contribution

(3) Added business value is calculated based on the CERN's past impact analysis, "*every €1paid to industrial firms generates €3 of additional business through LHC procurement*"

3. Report on Technological and Economic Impact Analysis (Cont.)

Economic Impact by the ILC Project

(1$=100yen)	ILC Construction	ILC Operation	Added Business Value	Total
Final Demands ($M)	4,315	8,625	8,145	21,085
Induced Production Value ($M)	10,389	17,747	16,470	44,606
Direct Effect	*4,012*	*8,172*	*6,966*	*19,150*
1st Indirect Effect	*4,090*	*5,798*	*5,978*	*15,866*
2nd Indirect Effect	*2,287*	*3,777*	*3,526*	*9,590*

3. Report on Technological and Economic Impact Analysis (Cont.)

Implication of the results:

(1) Economic impacts by the ILC project is not significantly different from other induced production indices.

(2) Estimate of added business value is not based on the actual technological impact analysis, could be considered as the maximum estimate.

(3) After all, economic impact could not be a major factor to justify estimated humongous costs.

* Economic impact for regional economy is out of the scope of this study

4. Discussion on Interim Report by the Special Committee

Possible draft recommendations by the Special Committee:

(1) Strategy and perspective of the new particle exploration should be clarified.

(2) Energy scale of ILC should be examined based on the results of the current LHC experiment.

(3) Understanding by the public and other science community than particle physics is very important in the decision making process.

5. Schedule

- The next Special Committee meeting will be held on June 25st, and draft interim report will be discussed.
- The Special Committee will continue to follow the findings by the LHC experiment.
- After examining the findings of LHC, judgement on ILC will be made.
- The Special Committee plans to set up another WG for discussing the strategy for securing enough human resource both in terms of researchers and engineers.
- The new WG plans to conclude the discussion by the end of FY 2015.