

# 6<sup>th</sup> meeting of SRF subgroup in IDT/WG2

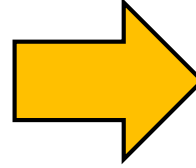
- ✓ Introduction
- ✓ Discussions on budget request
- ✓ Others (if any)

Attendees: A. Yamamoto, S. Michizono, H. Hayano, N. C. Lasheras, D. Delikaris, S. Posen, R. Rimmer, M. Liepe, P. McIntosh, B. Laxdal, E. Cenni, L. Monaco, M. Ross, S. Stapnes, H. Weise, Kirk

<https://agenda.linearcollider.org/category/256/>

# Minor changes in task list for technical preparation

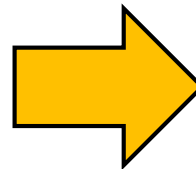
SRF



Main linac and SCRF

※Based on TDR

- ◆ Cavity and cryomodule production
- ◆ Cryomodule transport (“Global CM transfer”)



- ◆ Cavity Industrial-production Readiness
- ◆ Cryomodule transport and Performance assurance
- ◆ Crab Cavity
- ◆ Bunch compressor and others (not only SRF)
- ◆ Engineering design report

※Hub-lab. Infrastructure added in CM and crab

# Reconfirmation of cost unit in ILC

- **ILCU** (ILC unit) has been used as the cost unit for ILC since GDE era
- Based on US dollars as of January 2012 (1 ILCU = \$1)

## TDR Vol.3 II

### 15.4.2.4 ILCU Definition in terms of PPP Indices

For the TDR, the ILCU will be defined as equal to the USD on January 1, 2012. Conversions of estimates obtained in currencies other than USD to ILCU will be based on PPP indices (as of January 1, 2012) relating those currencies to the USD. The only exception to this rule is for the superconducting material for the cavities. There is only one supplier of RRR-niobium raw material in the world. Thus, it is appropriate to consider this cost element to be a commodity which must be purchased on the international market. In preparing the Value estimate, conversions from currencies other than USD to ILCU for this cost element have been based on exchange rates as of January, 2012. The PPP indices of four regional<sup>6</sup> currencies, relative to the USD, together with exchange rates, are shown in Fig. 15.2. Numerical values of the PPP indices and exchange rates for January, 2012, which are used in the Value estimate, are given in Table 15.2.

**Table 15.2.** Currency conversion factors between ILCU and national currencies (January, 2012). To convert a cost element from ILCU to the indicated currency, multiply by the factor appropriate for the type of cost element.

Cost element type	ILCU→USD	ILCU→Euro	ILCU→Yen	ILCU→CHF
Civil construction (PPP)	1	0.939	109.3	1.303
Machinery and equipment (PPP)	1	0.923	127.3	1.480
Superconducting material (EX)	1	0.776	76.9	0.939

# FTE-yr estimated in ILC Action Plan 2016

ML and SCRF has 224 (Japan) and 74 (abroad)

Appendix 5. Breakdown of the Human Resource Plan (see: Table 3 in the main text)

Category	Subject		pp	P1	P2	P3	P4	Int.-FTE
Grand-Sum		Sum =JP+Abr.		118 = 80+38	161 = 105+56	222 = 138+84	282 = 171+111	783 = 494+289
Acc-Sum		Sum =JP+Abr.		82 =54+28	115 =74+41	163 =98+65	211 =122+89	571 = 348+223
Accelerator (FTE)	Tech. coordination	JP abroad		1 2	1 2	1 2	1 2	4 8
	ADI	JP abroad		3 6	4 8	6 12	8 16	21 42
	SRF (& ML)	JP abroad		38 8	50 12	62 22	74 32	224 74
	Nanobeam (& DR, BDS)	JP abroad		6 6	9 9	15 15	21 21	51 51
	Sources (e-, e+)	JP abroad		3 3	4 4	5 5	6 6	18 18
	Others (RTML, Dump etc.)	JP abroad		3 3	6 6	9 9	12 12	30 30

KEK ILC Action Plan 2016

# Schedule of SRF (incl. crab) subgroup meeting in IDT/WG2

Meeting #	Date	Contents
1	29/Sep/2020	introduction, member list, schedule/work items in technical preparation, discussions
2	13/Oct/2020	New member, discussions on how many cavities/CMs to be produced, AWLC2020
	<b>19~22/Oct/2020</b>	<b>AWLC2020 on virtual</b>
3	27/Oct/2020	Brief report of KEK-DOE mtg and AWLC, discussions on main items in technical preparation
4	10/Nov/2020	Reports from US labs., introduction to Michizono-san's report, discussions on cost down R&D, crab cavity, high pressure gas, etc.
	24/Nov/2020	Crab kick-off meeting
5	24/Nov/2020	To be fixed task list in technical preparation period
	30/Nov/2020	2 <sup>nd</sup> Crab cavity meeting (after this, SRF subgroup leads to the discussions on crab cavity)
6	8/Dec/2020	<b>Discussions on the budget request for SRF technical preparation</b>
7	22/Dec/2020	Discussions on draft of sharing work items in technical preparation period
	25/Dec/2020	Submission of budget request to EB
?	12/Jan/2021?	
?	19/Jan/2021	
	<b>19~21/Jan/2021</b>	<b>TTC meeting 2021 on virtual</b>
?	26/Jan/2021	
	Feb/2021	First draft of budget request in each region/lab., Submission to WG1/EB
		Preparation for MOU between/among laboratories
	Jun~Jul/2021	Submission of budget request to MEXT, in case of Japan
15/Dec/2020	<b>28/Jan~2/Jul/2021</b>	<b>SRF 2021 on virtual</b> 7th meeting of IDT WG2

# Questions/Discussions/Comments (memorandum) @6<sup>th</sup> meeting

Translation by Kirk

- Budget request
  - Cost of cavity production includes everything from production to cavity string excluding infrastructure as hub-laboratory
    - Helium tank, magnetic shield, surface treatment, clean room work, high pressure gas regulation, VT (after 2<sup>nd</sup> pass)
      - Additional lecture/meeting is necessary for high pressure gas regulation of Japan (not this year, but needs to be hurried)
    - Unit cost is preferable?
      - Cavity and coupler cost looks valid
  - Coupler production includes preparation work, waveguide system to connect between two couplers for RF processing at test bench excluding klystron/modulator
  - Number of CM in abroad
    - In US, as we already presented in the previous subgroup meeting, totally four CMs will be produced (FNAL/J-LAB), the number is increased
    - The number of abroad production needs to be discussed well in Europe
  - Remaining cavities (not used for CM production) and bad performance cavities
    - If the performance is good and HPG is satisfied, those cavities can be in stock for ILC (may be not used in technical preparation period)
    - If the performance is bad and HPG is satisfied, those cavities can be repeatedly surface-treated and tested to achieve the good performance
    - If the performance is bad and HPG is not satisfied, those cavities can be used for the other purpose
    - If a cavity with poor performance appears, it is necessary to discuss in advance whether or not the cavity equips a helium tank in production
  - Additional infrastructure
    - If you need some additional items, you can put them into hub-lab. infrastructure in ML-SRF-2
      - ex) klystron/modulator, CM test cave, coupler test area, clean room, pre-tuning machine, EP facility, vacuum furnace for heat treatment, etc.
    - UK team needs the CM test area (cave?) as the additionally necessary infrastructure for crab cavity
  - Crab cavity
    - Japan may/can not control the management for this, because too many labs. have strong interest
      - Candidate labs: UK, FNAL, J-LAB, TRIUMF, CERN?
    - In the current budget request, only abroad has some number in budget/FTE-yr
  - CM transportation
    - Simulation and support from DESY are necessary
    - Cost of cage/shock damper looks reasonable
    - Cost of ground transportation to be checked
    - Cost of sea shipment may be increased, if a special container is necessary (because CM length for ILC is longer than E-XFEL)
      - KEK will have the meeting with a transportation company this month
  - Breakdown is necessary for each quantity and FTE-yr for abroad
  - FTE-yr
    - EDR needs some people, then we put 10 FTE-yr for each
  - Release
    - If you keep this sheet confidentially, we can release → already done

# References

- KEK homepage
  - <https://www2.kek.jp/ilc/en/>
- Technical Design Report
  - <https://ilchome.web.cern.ch/publications/ilc-technical-design-report>
  - <https://www2.kek.jp/ilc/en/docs/>
- The International Linear Collider Progress Report 2015
  - <https://www2.kek.jp/ilc/en/docs/>
- The International Linear Collider – A Global Project
  - Submitted to European Particle Physics Strategy Update, 2020.
  - <https://indico.cern.ch/event/765096/contributions/3295702/>
- ILC Action Plan
  - <https://www.kek.jp/ja/newsroom/2016/01/06/1400/>
  - <https://www.kek.jp/ja/newsroom/2018/04/24/1200/>
- Recommendations on ILC Project Implementation
  - [https://www.kek.jp/ja/newsroom/attic/20191001\\_%20ILC%20Project.pdf](https://www.kek.jp/ja/newsroom/attic/20191001_%20ILC%20Project.pdf)