IDT-WG2 report

Shin MICHIZONO (KEK/IDT-WG2)

(May 18, 2021)

- FTEs for final documentation
- Status of the documents

Accelerator activities at ILC Pre-lab phase

Technical preparations & SRF R&D for cost reduction [shared across regions]

- SRF performance R&D, quality testing of a large number of cavities (~100), fabrication and shipping of cryomodules from North America and Europe (for validating shipping)
- Positron source final design and verification
- Nanobeams (ATF3 and related): Interaction region: beam focus, control; and Damping ring: fast kicker, feedback
- Beam dump: system design, beam window, cooling water circulation
- Other technical developments considered performance critical

~360 FTE-yr (mainly 1st – 3rd year) + infra. for WPs (~130)

Final technical design and documentation [central office in Japan with a support from other labs]

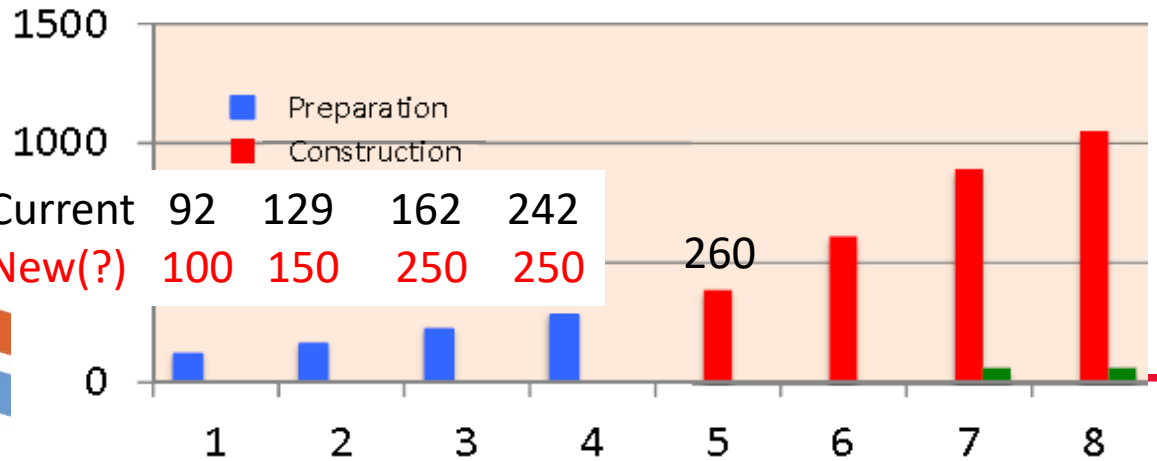
- Engineering design and documentation, WBS
- Cost confirmation/estimates, tender and purchase preparation, transport planning, mass-production planning and QA plans, schedule follow up and construction schedule preparation
- Site planning including environmental studies, CE, safety and infrastructure (see below for details)
- Review office
- Resource follow up and planning (including human resources)

EDR:mainly 1st – 3rd year ~100 FTE-yr (under discussion)
construction preparation: mainly 4th year ~100 FTE-yr (under discussion)

Preparation and planning of deliverables [distributed across regions coordinated by the central office]

- Prototyping and qualification in local industries and laboratories, from SRF production lines to individual WBS items
- Local infrastructure development including preparation for the construction phase (including Hub.Lab)
- Financial follow up, planning and strategies for these activities

Common technical support ~50 FTE-yr
high-pressure gas, radiation, …



FTEs for WBS and WP structure (draft)

WBS		WBS-T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	Area-SUM
		Sys. Des. Simulatio	Acc. Str. (SRF/NRF)	HLRF	Cryog.	Mag/PS (SC/NC)	CNTL/LL RF	Survey/ Alignment	Vac.	Collimator /DUMP	AREA Specific	CE/CFS	Install. (for EDR)	Management	
WP-0	ADI														
WBS-A1	Sources	Y	Y (x)	Y	Y	Y	Y	Y	Y		?	Y		Y	
A2	DR	5 (WP11)	Y (0.65)	Y	Y	13 (WP?)	Y	Y	Y		?	Y		Y	
A3	RTML	Y	-	-	-	Y	Y	Y	Y		?	Y		Y	
A4	ML	Y	53 (WP1) **200 (WP2)**	Y	Y	Y	Y	Y	Y		?	Y		Y	53+200 +?
A5	BDS	Y	Y (CC) WP3	-	Y	Y	Y	Y	Y		?	Y		Y	
Tech-SUM			53+200 +32+?												

FTE matrix proposed on April 20 IDT-WG2 meeting

Document status

(A) Proposal for the ILC Preparatory Laboratory (Pre-lab): (so called “interim proposal”)

- Includes summary of the WPs.
- Was sent to ICFA for approval. According to the comments, now IDT-EB is revising.
- Will be finalized by end of this week.
- Will be reported at ILC Newsline next week.

(B) Technical Preparation and Work Packages (WPs) during ILC Pre-Lab: (so called “TPD”)

- Is the supporting document of (A)
- Will be partly modified in order to harmonize to (A)
- Will be open via Digital Object Identifier (DOI) link. (only main text.)

(C) “Key issues related to the ILC project” in Japanese

- Is recently summarized by KEK/JAHEP
- Responds to ILC advisory panel (MEXT)* and Science council of Japan (SCJ)**
- Includes “physics”, “accelerator technical issues”, “civil” etc.

These three documents will be submitted to MEXT early next month.

*https://www.mext.go.jp/component/b_menu/shingi/toushin/ icsFiles/ afieldfile/2018/09/20/1409220_2_1.pdf
**Executive summary in English: http://www.scj.go. jp/ja/info/kohyo/pdf/kohyo-24-k273-en.pdf
Full report in Japanese: http://www.scj.go.jp/ja/info/kohyo/pdf/kohyo-24-k273.pdf

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		1	1	1	1	4
		abroad		2	2	2	2	8
	ADI	JP		3	4	6	8	21
		abroad		6	8	12	16	42
	SRF (& ML)	JP		38	50	62	74	224
		abroad		8	12	22	32	74
	Nano-beam (& DR, BDS)	JP		6	9	15	21	51
		abroad		6	9	15	21	51
	Sources (e-, e+)	JP		3	4	5	6	18
		abroad		3	4	5	6	18
	Others (RTML, Dump etc.)	JP		3	6	9	12	30
		abroad		3	6	9	12	30

We need to revise ILC action plan especially SRF.

Europe and US will have integrated and experienced in their own projects (such as E-XFEL and LCLS-II) with human resources already trained with a level of 50–100 FTEs in each laboratory (DESY/INFN-LASA, CEA/CNRS-Saclay/CNRS-LAL-Orsay, SLAC, Fermilab, and JLab). These existing well-trained human sources are not included in this table.

From KEK ILC action plan (2018)
https://www.kek.jp/en/newsroom/KEK-ILC_ActionPlan_Addendum-EN%20%281%29.pdf

Table 3'. Human resources required during the ILC accelerator preparation (FTE) for ILC-250 [1)]

	Pre-preparation phase[2)]	Main preparation [3)]				ILC250 Construction[4)]		Notes
	Current	P1	P2	P3	P4	C1	C2	
Accelerator						160	305	JP needs to mature SRF mass-prod. technology[5)]
Japan	42	54	74	98	122			EU/US already has experience[6)]
:abroad	≥20	28	41	65	89			
CFS						50	60	JP is primarily responsible, w/ outsourcing
Japan	3	11	11	13	17			abroad and professional contribution
:abroad	1	3	5	5	5			
Common:						100	110	JP is primarily responsible
Japan	2	7	10	13	14			abroad and professional contribution[7)]
:abroad	1	3	4	6	7			
Administration:						75	135	JP is primarily responsible
Japan	5	8	10	14	18			abroad and professional and regional contribution[8)]
:abroad	3	4	6	8	10			
Total	≥77	118	161	222	282	385	610	

6) Europe and US will have integrated and experienced in their own projects (such as E-XFEL and LCLS-II) with human resources already trained with a level of 50–100 FTEs in each laboratory (DESY/INFN-LASA, CEA/CNRS-Saclay/CNRS-LAL-Orsay, SLAC, Fermilab, and JLab). These existing well-trained human sources are not included in this table.

CFS-Sum		Sum =JP+Abr.		14 = 11+3	16 = 11+5	18 = 13+5	22 = 17+5	70 = 52+18
Conventional Facilities and Siting (CFS) (FTE)	Technical coordination	JP		1	1	1	1	4
		abroad		1	1	1	1	4
	Civil engineering	JP		2	2	3	4	11
		abroad		1	1	1	1	4
	Building	JP		2	2	3	4	11
		abroad		1	1	1	1	4
	Utility-Electrical	JP		2	2	2	3	9
		abroad		0	1	1	1	3
	Utility-Mechanical	JP		2	2	2	3	9
		abroad		0	1	1	1	3
	Environment	JP		2	2	2	2	8
		abroad		-	-	-	-	-

Common-Sum		Sum =JP+Abr.		10 = 7+3	14 = 10+4	19 = 13+6	21 = 14+7	64 = 44+20
Common Technical Support (FTE)	Technical coordination	JP		1	1	1	1	4
		abroad		-	-	-	-	-
	EDMS	JP		1	2	3	3	9
		abroad		1	1	2	2	6
	Computing, Networking	JP		2	3	4	4	13
		abroad		1	2	2	3	8
	Radiation safety	JP		1	2	3	4	10
		abroad		1	1	2	2	6
	General eng. support	JP		2	2	2	2	8
		abroad		-	-	-	-	-