

Sources Subgroup Kickoff

Kaoru Yokoya (KEK)

2020.10.5

IDT-WG2 organization

Bi-weekly meeting: Sep.22, Oct. 6, ...

IDT WG2
 Shin Michizono (Chair)
 Benno List (Deputy)

Charges of Sub-groups

- Discuss the topics for
 - technical preparation (remaining topics) at Pre-lab
 - preparation for mass production at Pre-lab
 - possible schedule at Pre-lab
 - international sharing candidates of these activities
- Report to the IDT-WG2

All members belong to some sub-group(s).

SRF

DR/BDS/Dump

Sources

Civil engineering

| | | | |
|---------------------------|-------------|------------------------|------------|
| Yasuchika Yamamoto | KEK | Toshiyuki Okugi | KEK |
| Dimitri Delikaris | CERN | Philip Burrows | U. Oxford |
| Hitoshi Hayano | KEK | David L. Rubin | Cornell |
| Olivier Napoly | CEA | Nikolay Solyak | FANL |
| Marc C. Ross | SLAC | Nobuhiro Terunuma | KEK |
| Akira Yamamoto | KEK | Kaoru Yokoya | KEK |
| Sam Posen | FNAL | Jenny List | DESY |
| Nuria Catalan | CERN | Thomas Markiewicz | SLAC |
| Robert Rimmer | JLAB | Luis Garcia Tabares | CIEMAT |
| Rongli Geng | JLAB | | |

| | |
|-----------------------------|-------------------|
| Kaoru Yokoya | KEK |
| Hitoshi Hayano | KEK |
| Masao Kuriki | U. Hiroshima |
| Benno List | DESY |
| Gudrid Moortgat-Pick | U. Hamburg |
| Joe Grames | JLAB |

| | |
|--------------------------|------------|
| Nobuhiro Terunuma | KEK |
| John Andrew Osborne | CERN |
| Tomoyuki Sanuki | U. Tohoku |

Technical preparation etc. will be discussed in bi-weekly sub-group meeting.

IDT WG2 timeline

Example (towards Pre-lab)

- 2020 Sep.: List of Pre-lab acc. activities/ budget/ schedule
- 2020 Oct.: Information sharing about technical preparation
- 2020 Oct.: AWLC
- 2020 Dec.: Draft of sharing remaining technical preparation/pre-lab preparation (each region/lab.)
- 2021 Feb.: First draft of budget request (each region/lab.)
- 2021 Dec.: IDT ends
- **2022 April: Pre-Lab starts**

Pre-lab schedule

1st year: TDR-based estimate recollection work started by an international team centered on the Pre-lab.

2nd year: Estimate tabulation work, internal review in the latter half of the 2nd year. The review also reports on the progress of technical issues during the preparation period.

3rd year: Conducted an **external review** and completed scrutiny of **costs and risks** (this is the end of incorporating cost reduction R & D).
Completion of **draft of engineering design report (EDR)**.

4th year: **EDR publishing** (first half), report on progress on technical issues, preparation work for each large bid.

Accelerator activities at ILC Pre-lab phase

Technical preparations /performance & cost R&D [shared across regions]

- SRF performance R&D
- 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

Final technical design and documentation [central project office in Japan with the help of regional project offices (satellites)]

- 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)

Preparation and planning of deliverables [distributed across regions, liaising with the central project office and/or its satellites]

- 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

CE, local infrastructure and site [host country assisted by selected partners]

- Engineering design including cost confirmation/estimate
- Environmental impact assessment and land access
- Specification update of the underground areas including the experimental hall
- Specification update for the surface building for technical scientific and administrative needs

What Should be Done This Year

- List up the technical preparations to be done in the Pre-Lab
 - Issues pointed out by SCJ and MEXT
 - Technical items necessary for writing EDR
 - Possible partners
 - Existing expertise
 - Need not guarantee now research cooperation and budget
 - Rough evaluation of the necessary cost
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- 2021 Feb.: First draft of budget request (each region/lab.)
 - To establish Pre-Lab we need KEK-to-Lab bilateral MoU

Technical Issues Pointed out by SCJ and MEXT on the Sources

- ILC Advisory Panel (MEXT)
 - Target cooling
 - Replacement of activated target
- SCJ
 - Prototype rotating target In the preparatory phase should be made in the preparatory phase
 - Magnetic focusing system right after target to be developed in the preparatory phase
 - Technology selection by the second year of the preparatory phase (→ must be reconsidered)

Special Problem of Sources Subgroup

- Technology selection of the positron source
 - Undulator (baseline)
 - e-Driven (backup)
- To follow the general timeline of the IDT-WG2 looks very tight in this respect
 - “2021 Feb.: First draft of budget request (each region/lab.)”
 - Impossible to select the technology by this time
 - But should be selected by the start of Pre-Lab at the latest
 - Next summer-autumn?
 - How? Do we need a special committee?