ILC IDT WG2

Meetings and conferences
Preparing for MEXT panel review
Subgroups for individual WPs

July 2021

- 19 Jul — Sources Group Regular Meeting 18 NEW
- 13 Jul — 4th Crab Cavity Meeting
- 13 Jul — 19th IDT WG2 Meeting

June 2021

- 29 Jun — 18th IDT WG2 Meeting
- 23 Jun — 17th IDT WG2 DR/BDS/DUMP group meeting
- 22 Jun — 17th Meeting of SRF Group
- 21 Jun — Sources Group Regular Meeting 17
- 15 Jun — 17th IDT WG2 Meeting
- 09 Jun — 16th IDT WG2 BDS/DR/DUMP group meeting
- 08 Jun — 16th Meeting of SRF Group
- 07 Jun — Sources Group Regular Meeting 16
- 01 Jun — 16th IDT WG2 Meeting

Technology for future HEP facilities

7-8 July 2021
Europe/Zurich timezone

Meeting: https://indico.cern.ch/event/1052657/

ILC presentation (Kirk):
https://indico.cern.ch/event/1052657/contributions/4430193/

- Overview
- Timetable
- Contribution List
- My Conference
  - My Contributions
- Registration
- Participant List
- Videoconference

Workshop framework

As an outcome of the European Strategy for Particle Physics 2020, CERN Council has mandated the Laboratory Directors Group (LDG) to define and maintain a prioritized accelerator R&D roadmap towards future large-scale facilities for particle physics. The roadmap should define a route towards implementation of the scientific goals of the European Strategy, bringing together the capabilities of CERN, large particle physics laboratories, and other institutes, to carry out R&D and the construction and operation of demonstrators. The European Strategy highlights five key areas where progress in R&D is needed, and has nominated five expert panels to build a proposal for the corresponding roadmap. High gradient RF acceleration is one of this panel.

The workshop is organized by the expert panel on high gradient RF structure nominated by the LDG. Its main objective is to collect information and material to identify key technologies and developments which are essential on the way towards the construction of future accelerators for high energy physics (HEP) and that will help the expert panel to prepare the R&D roadmap related to high gradient RF structures.

Speakers are invited to give overview talks on specific topics/technology and are asked to follow the following guidelines:

- Depict the main challenges of the technology
- Identify the main requirements/specifications in the view of future HEP facilities
- Summarize the state of the art
- Identify the main potentialities of performances improvement, and where R&D would be beneficial. Here, performances should be understood not only from the technical point of view (high gradient, high power, low loss…) but also from the reliability, costeffectiveness and energy efficiency point of views.
- If relevant, address the question of the existence or need of technical infrastructure to perform these developments and also potential questions related to mass production and maturity of industry for it.

Speakers are explicitly asked to not emphasize their own lab activities but to give an overview about the respective activities in the field. Whenever useful, the could include material from others or search for co-speakers (share the task !).

Starts 7 Jul 2021, 14:00
Ends 8 Jul 2021, 20:00

EPS last week of July (accelerator track):

- ILC and CLIC talk: Angeles Faus-Golfe
- Prelab plans: Benno List

Preparing for MEXT panel review

Need to be prepared to present recent progress and that the Prelab plans can address the outstanding issues needed to be solved before construction

Technical Issues pointed out in the report by MEXT's ILC Advisory Panel

Table 4.1: Summary of the ILC Advisory Panel's Discussions to Date after Revision. The quoted page numbers refer to those of the ILC Advisory Panel's report.[21]

Page #	R&D Issues
5, 13, 32	[**Damping Ring**] There still remain issues on several subsystems, such as beam dump, positron source, electron source, beam control, and the injection/extraction of the damping ring.
32	[**Beam Dump**] The whole beam dump system should be developed in the main preparatory phase. The required technologies include durability of the window, where continuous high-power beam pass through, and its maintainability and resistance to earthquakes.
32,33	[**Positron Source**] The helical undulator scheme is adopted as the positron source. It contains some technologies under development such as the cooling of the target irradiated by the gamma rays from the undulator and the replacement method of the activated target.

https://www.mext.go.jp/component/b_menu/shingi/toushin/__icsFiles/afieldfile/2018/09/20/1409220_2_1.pdf

Screenshot

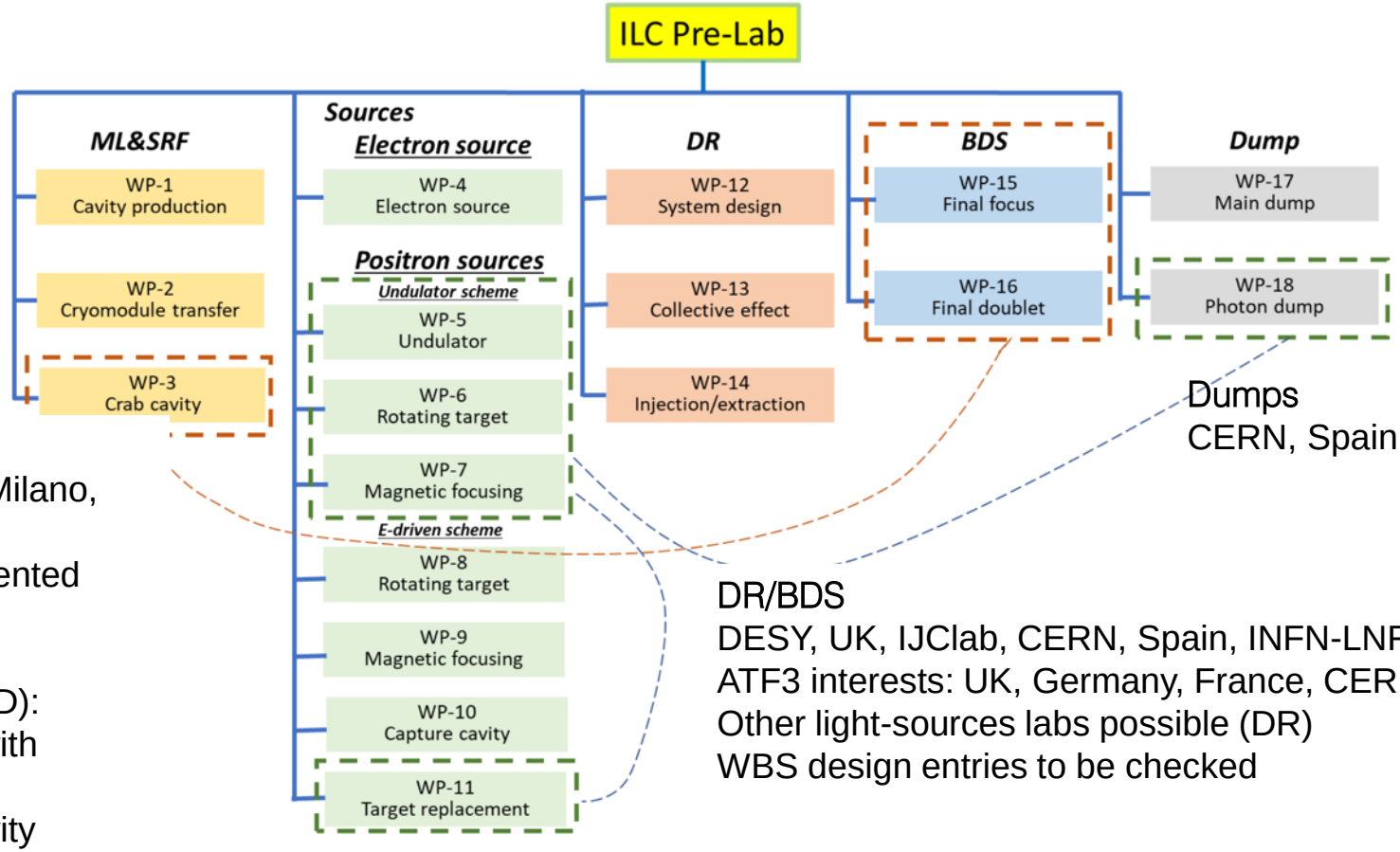
Technical Issues pointed out in the report by SCJ

Table 4.2: Technical issues pointed out in the report by the Science Council of Japan.[22]

R&D Issues
[**SCRF**] The design reference value for the SCRF acceleration gradient of 35 MV/m is based on the technical level that is currently achievable. It will be necessary to achieve this reliably and with a good yield including automation techniques; further performance improvement is also desired.
[**SCRF**] It is foreseen that the bulk of the SCRF cavities will be provided through in-kind contribution from the participating countries. An important issue will be the quality assurance that maintains the compatibility among them.
[**Positron Source**] In the main preparatory phase, it is planned that the prototype of the rotating target will be made and the magnetic focusing system immediately after the positron source will be developed. The technology selection is to be made by the second year of the main preparatory phase. The strategy should be clarified, taking into account the R&D cost.
[**Interaction Region**] The technology for the control and feedback system related to the beam focusing and position control needs be established. The acceptable level of microtremor in the interaction region needs to be quantified.
[**Beam Dump**] The soundness monitoring of the window material, the concrete design for a remote-controlled replacement/exchange system, and the detail of the reaction between a high energy beam and water need to be adequately studied during the main preparatory phase.

Original in Japanese: http://www.scj.go.jp/ja/info/kohyo/pdf/kohyo-24-k273.pdf

Pre-lab work-packages



ML & SRF
CEA, CERN, CIEMAT, UK, INFN Milano, DESY
Not all European SRF labs represented (see later)

Additionally (in WBS but not in TPD):

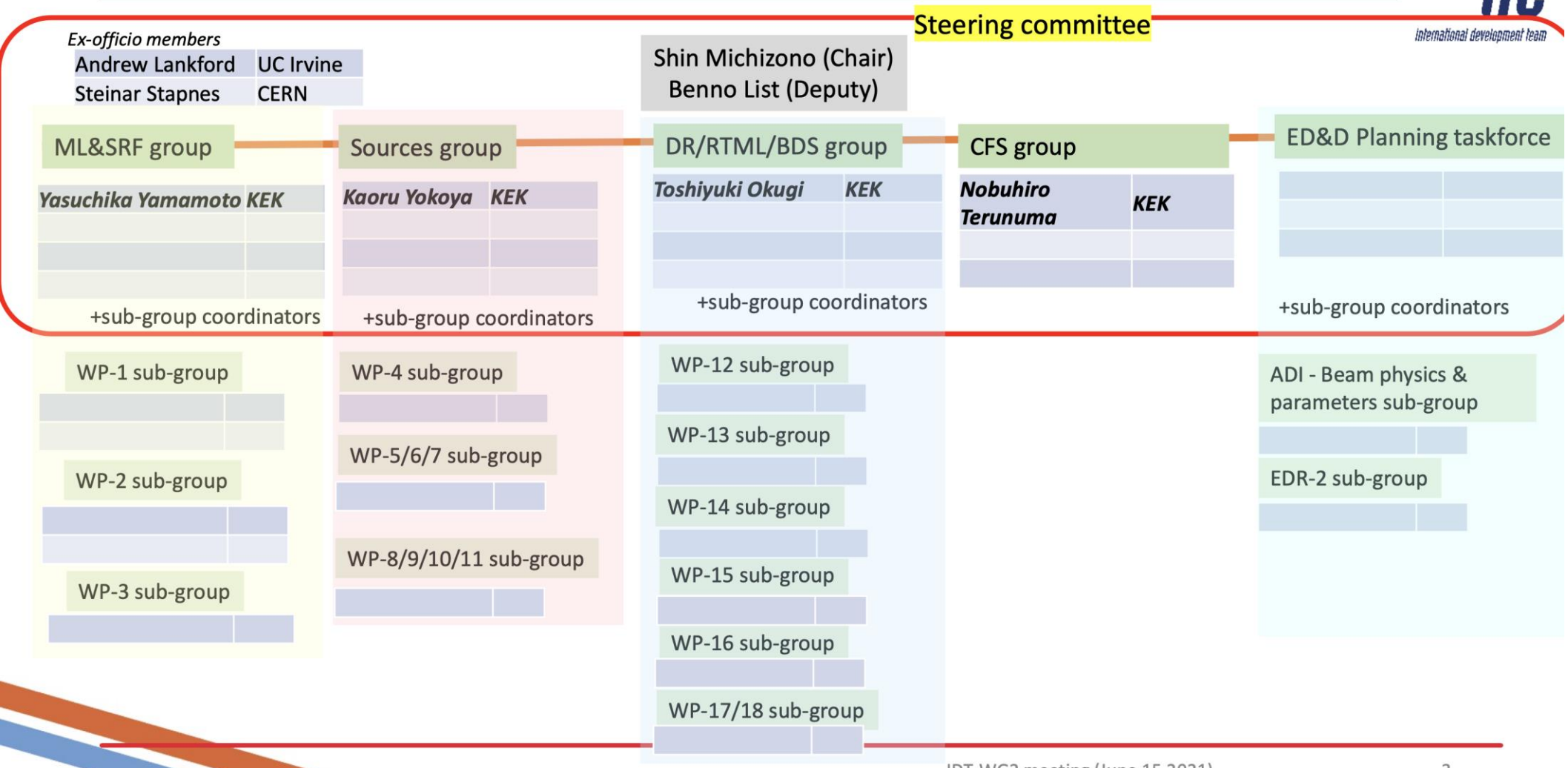
- Long term cryo collaboration with CERN.
- HiEff RF another relevant activity
- SRF “basic” R&D for fabrication improvements or long term performance improvements (i.e. for upgrades)

Dumps
CERN, Spain

DR/BDS
DESY, UK, IJClab, CERN, Spain, INFN-LNF
ATF3 interests: UK, Germany, France, CERN, Spain
Other light-sources labs possible (DR)
WBS design entries to be checked

Sources
DESY, UK, CERN
IJCLab also, other groups also possible (FCC-ee, Dafne)

IDT-WG2 with new task-force (draft ver.2)



Next:

Set up during August/September

Define mandate and tasks

Make sure existing WG2 members and new ones are becoming involved

WG2

- Progress continues
- Focus next on subgroups and – importantly – EDR and overall design studies
  - On European side **it is felt mandatory that the tasks are well-defined and time-limited related to technical issues (WP by WP)**