Meeting report of SRF subgroup in IDT/WG2

- Membership of SRF subgroup
- Report of 1st meeting
- Presentation list in AWLC2020

You can download all slides

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

Kirk

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

Yasuchika Yamamoto	***KEK***
Dimitri Delikaris	CERN
Hitoshi Hayano	KEK
Olivier Napoly	CEA
Marc C. Ross	SLAC
Akira Yamamoto	KEK
Sam Posen	FNAL
Nuria Catalan	CERN
Robert Rimmer	JLAB
Rongli Geng	JLAB

newly added after 1st meeting

DR/BDS/Dump

Toshiyuki Okugi	***KEK***
Philip Burrows	U. Oxford
David L. Rubin	Cornell
Nikolay Solyak	FANL
Nobuhiro Terunuma	KEK
Kaoru Yokoya	KEK
Jenny List	DESY
Thomas Markiewicz	SLAC
Luis Garcia Tabares	CIEMAT

Sources

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

Civil engineering

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)

2021, Submission of budget request in each region/lab,
(**2021**, early Summer: Submission of budget request to MEXT, in case of Japan)

Time

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

Materials for Pre-lab human resources, budget, technical preparation

- KEK ILC action plan (Jan. 2018, KEK)

https://www.kek.jp/en/newsroom/KEK-ILC_ActionPlan_Addendum-EN%20%281%29.pdf

- "Recommendations on ILC Project Implementation" (Oct. 2019, KEK)
  https://www.kek.jp/en/newsroom/2019/10/02/1000/

* Both materials are based on KEK estimate.

Technical preparation of SRF (only 4 years!)

ILC spec. should be satisfied!

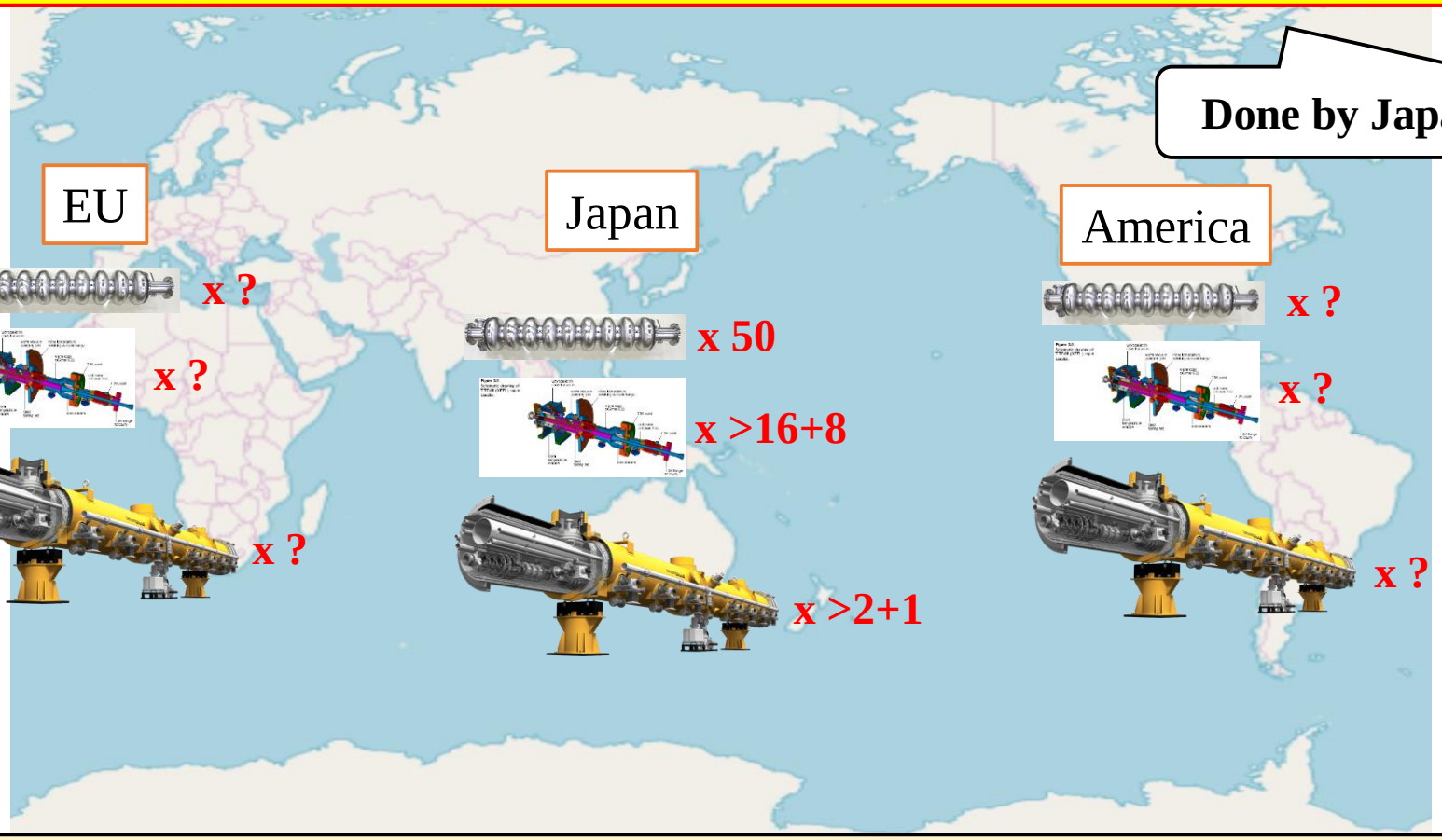
- Mass production
  - Cavity production by cost effective method (to be discussed true number)
    - Japan: 50 cavities, Others: 50 cavities
  - Ancillaries production (power coupler, tuner, HOM antenna, etc.)
  - Cryomodule production (Prototype, Type A, Type B)
- CM transportation (**Global CM transfer**)
  - After marine transportation, CM test is done in Japan (maybe in others)
  - After CM test, CM may return to home country

In case of Japan;
- **Construction of hub-laboratory for mass production**
- **Demonstration of beam acceleration satisfied with ILC spec.**

Remarks:
- Necessary cost should be considered **based on TDR**.
- Another important point is whether new technology can be (or prospectively) **reliable**.

Mass production

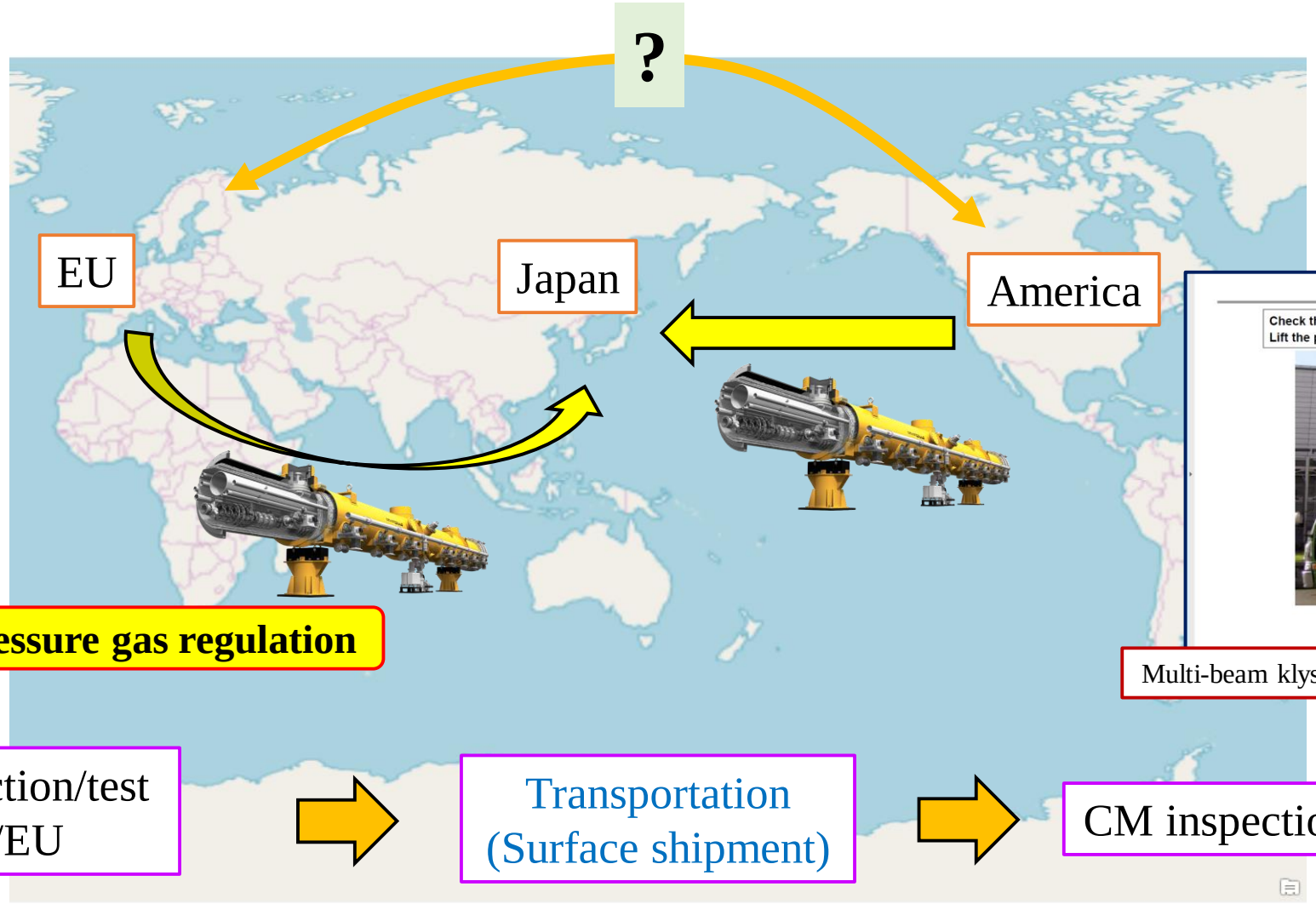
Before mass production starts, tuner design should be fixed!!



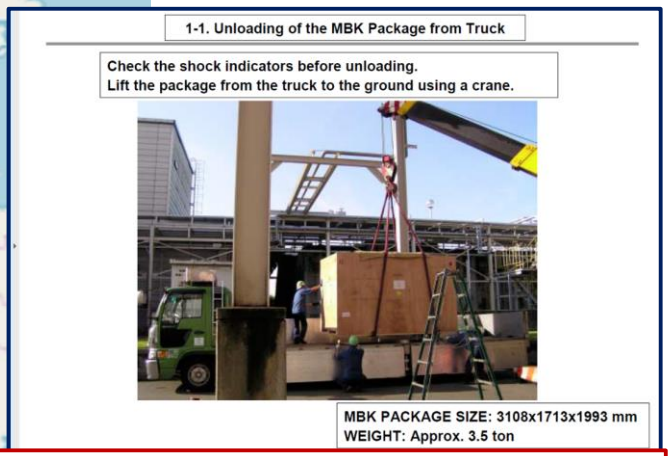
Done by Japan-U.S. collaboration

Which lab. is responsible for cavity, power coupler, tuner, CM, etc.?
How many cavities, couplers, CMs are produced?

Cryomodule transportation from overseas



conforming to high-pressure gas regulation



Multi-beam klystron transportation from Japan to EU

New CM production/test @America/EU → Transportation (Surface shipment) → CM inspection/test @Japan

Note: Returning the CMs to Europe/Americas for redundant confirmations, to be discussed.

In case of Japan (KEK)…

STF

Demonstration of beam acceleration satisfied with ILC spec.

Infrastructure upgrade for hub-lab. is mandatory!

COI

Mass production of CM

CFF

Mass production of cavity

Questions/Discussions/Comments (memorandum) 1st meeting

Translation by Kirk (still in progress)

- Surface treatment
  - Which surface treatment method (EP, HT) is selected in mass production?
    - Surface treatment method is flexible, rather, plug-compatible design of cavity package should be fixed
    - To investigate yield rate, same method should be used. One method in each region (Japan, US, EU)?
    - Always think about which method is used in mass production (performance, cost effective)
    - Choice as advanced technology should be left, even though new method does not work well at present
- Power coupler
  - Power coupler needs a lot of improvements for ILC
  - D. Kostin will present those issues and some suggestions in AWLC2020
- CM transportation
  - 13 CMs will be transferred from EU to US by plane in PIP-II (2023-2024?)
  - CM of ILC needs very large cage for marine transportation. After arrival at Japan, the cage may be sent back.
  - Cost of aerial transportation is much higher than marine
  - Cost of marine transportation is included into budget of each region
  - Design of cage and supporting jigs is necessary
  - “CM transportation” is not appropriate, then ”Global CM transfer” is better?
- Necessary to fix design of tuner/coupler until second year of technical preparation phase when technical review is done
- Additional membership (Michizono-san discussed with Andy and Steiner)
- Budget request of SRF including technical preparation
  - Budget request of subgroup → WG1 → each laboratory → Conclusion of MOU
  - Mass production and Global CM transfer should be summarized to one page for each until end of this year
  - Preparation for conclusion of MOU after Feb/2021
- Introduction of activity of SRF subgroup will be presented in AWLC2020
- Request to upload meeting slide on INDICO