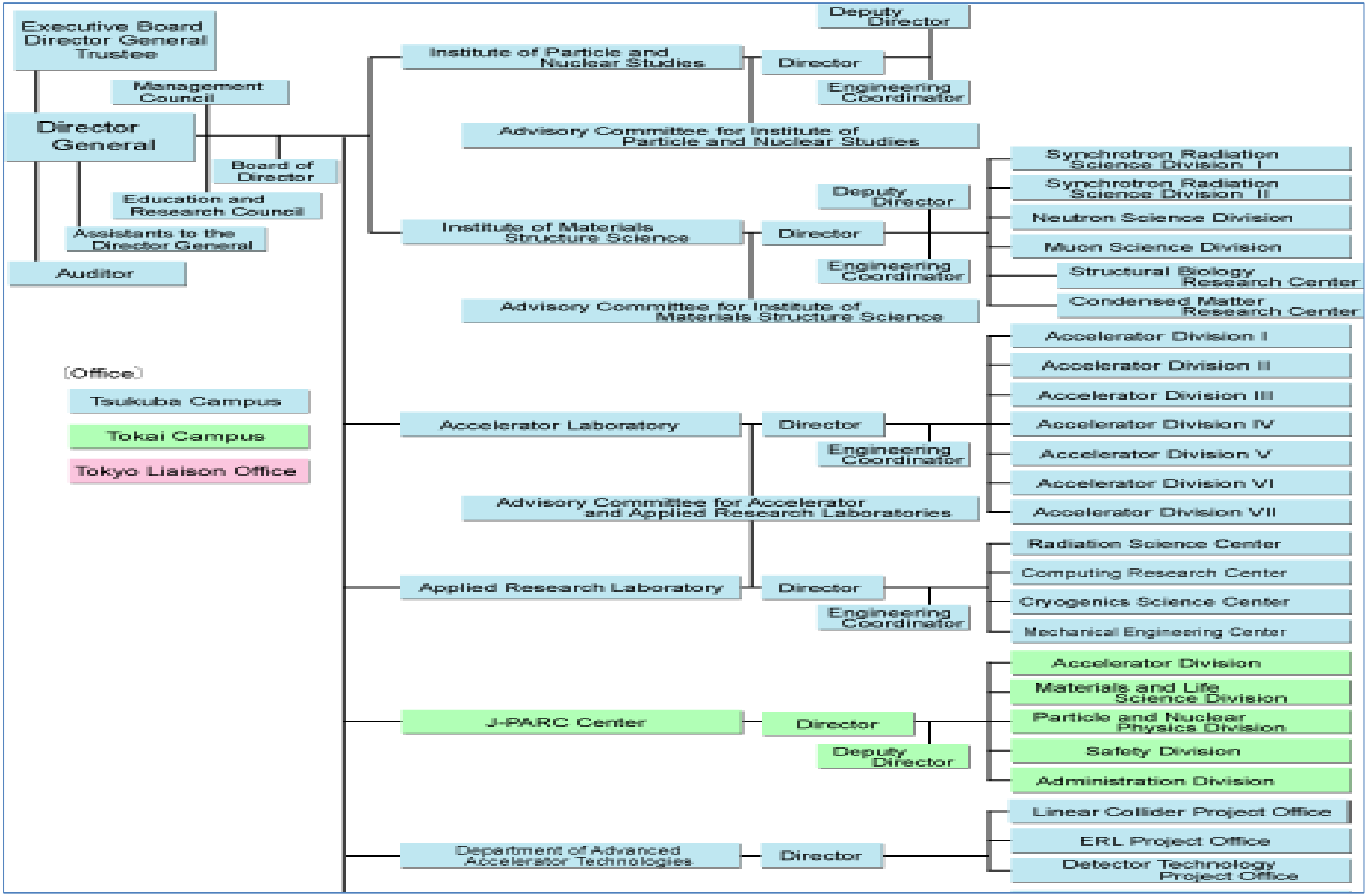
Brief Introduction of KEK Linear Collider Project Office

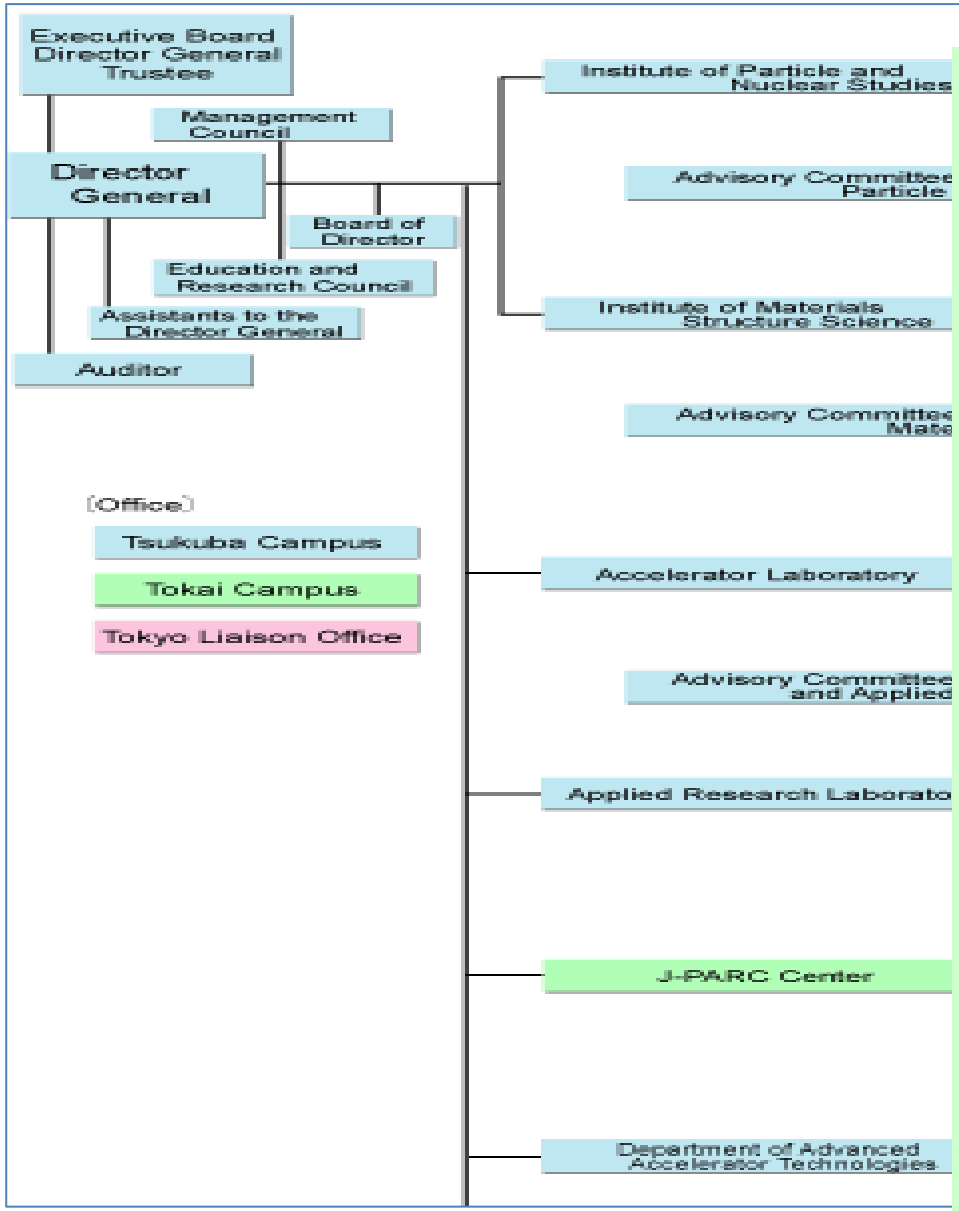
Akira Yamamoto
KEK

Report provided for ILC-TB Meeting, 2013-4-12

KEK Organization



KEK Organization



- Institute of Particle and Nuclear Study
- Institute of Materials Structure Science
- **Accelerator Laboratory**
  - 1, 2, JPARC
  - 3, 4 KEKB
  - 5 Injector Linac for KEKB and PF
  - 6 Acc. R&D including ILC
  - 7 PF-Ring and ERL
- Applied Research laboratory
  - Cryogenics Science Center
- Advanced Accelerator Technologies
  - Linear Collier Project Office
  - ERL Project Office

FY2013: LC Project Office organization

2013-04-08

LC Project Office

• Head / Deputy Heads	A. Yamamoto / H. Hayano, K. Fujii, T. Shidara
• AAT budget execution :	S. Yamaguchi (Head: Acc., #6)
• Secretary:	T. Shirakata
• Communication :	R. Takahashi, N. Kobayashi
• Technical Associates:	
– ATF:	N. Terunuma, T. Tauchi
– STF:	H. Hayano
– SCRF Cavity	E. Kako
– SCRF cavity fabrication in house	M. Yamanaaka
– Cryomodule and cryogenics	H. Nakai
– HLRF and LLRF	S. Michizono
– Beam Dynamics	K. Kubo
– Physics and Detector , MDI	K. Fujii,
– CFS	A. Enomoto, M. Miyahara
– Accelerator Design	K. Yokoya

Meetings :

• Regular weekly meeting	Every Monday: 9:30 ~ 11:00
KEK LC Promotion Committee	Every two month

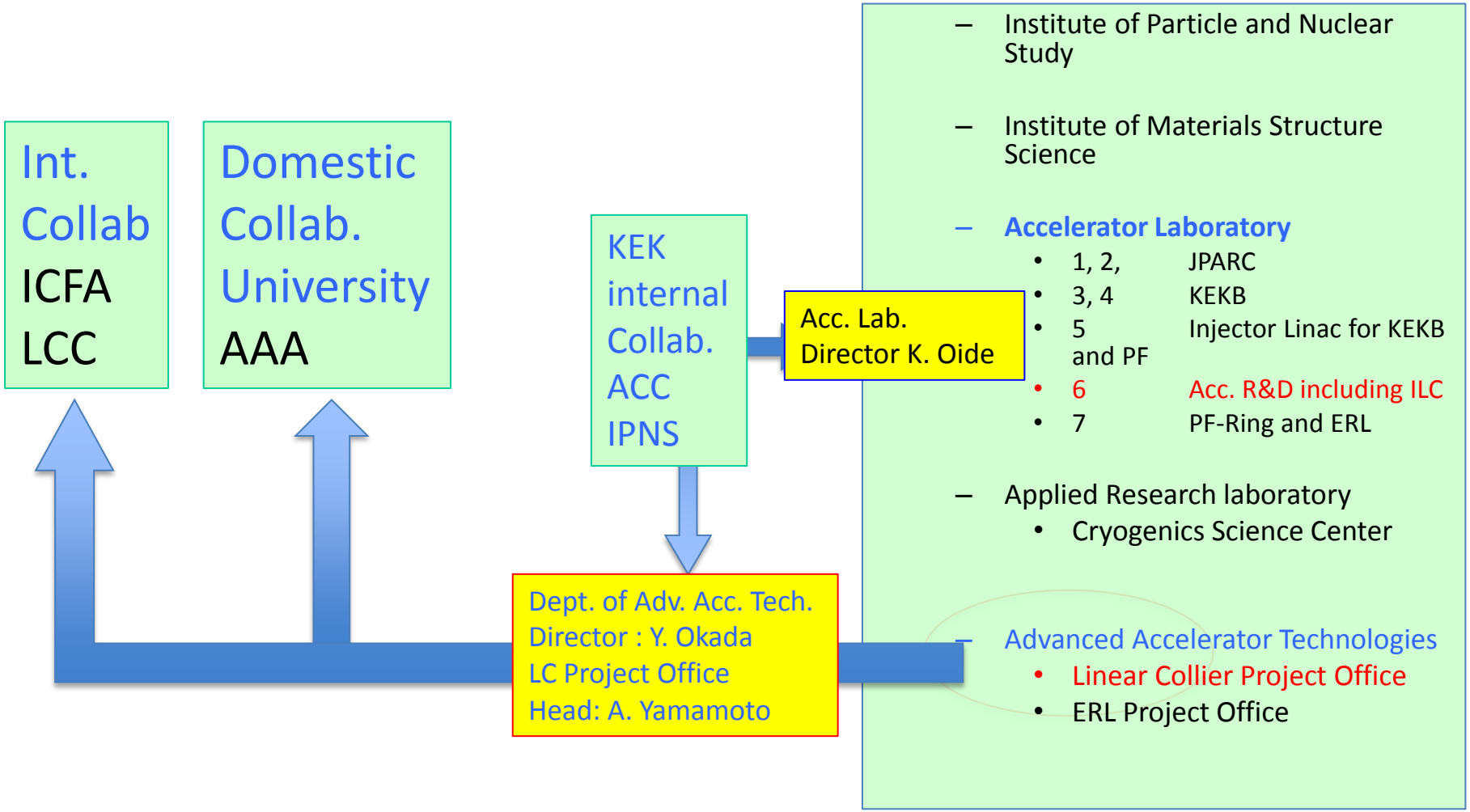
Function of KEK LC Office

- Roles
  - Program Coordination
    - ILC Accelerator Design, R&D, CFS design, Geological Survey
    - Support for the ILC to be hosted by Japan
- Coordination for International and domestic cooperation
  - Interface to global cooperation with LCC
  - Coordination of domestic cooperation
  - Linkage to International cooperation to/from the KEK internal coordination/activities

Share of Responsibilities

- Dept. of AAT & LC Project Office to:
  - Planning and Coordination for accelerator R&D and design study
  - Planning and execution of the geological survey
- Accelerator Laboratory
  - Execution of the R&D and design study agreed,
- Institute of Particle and Nuclear Study
  - Execution of the R&D and design study agreed,

Cooperation Diagram



ILC Technical Board – in LCC phase

LCC Directorate

LC Project Office (KEK)
Head: Akira Yamamoto
Deputy: H. Hayano
K. Fujii
T. Shidara

ILC Collaboration
Director – Mike Harrison (BNL)
Deputy Director – Hitoshi Hayano (KEK)

Technical Board
Nobuhiro Terunuma (KEK)
Yasuchika Yamamoto (KEK)
Nick Walker (DESY)
Olivier Napoli (CEA)
Marc Ross (SLAC)
Nikolay Solyak (Fermilab)

KEK ILC R&D Plan beyond TDR

- Cavity gradient improvement with further production of cavities, at least another 4 cavities in JFY2013, with industry
- Cavity production in house, and industrial fabrication technology R&D in cooperation with industry
- STF program for CM1 (8 cavity + SCQ) + CM2a (4 cavities) to realize the beam in 2014 or later,
- ATF program for smaller beam size (to be 37 nm) and the nano-stability, and …

STF2; SCRF ACCELERATOR R&D PLAN

■ Objective

•High Gradient (32 MV/m)
＝＞Demonstration of full cryomodule

・Pulse and CW operation (for effectuve R&D

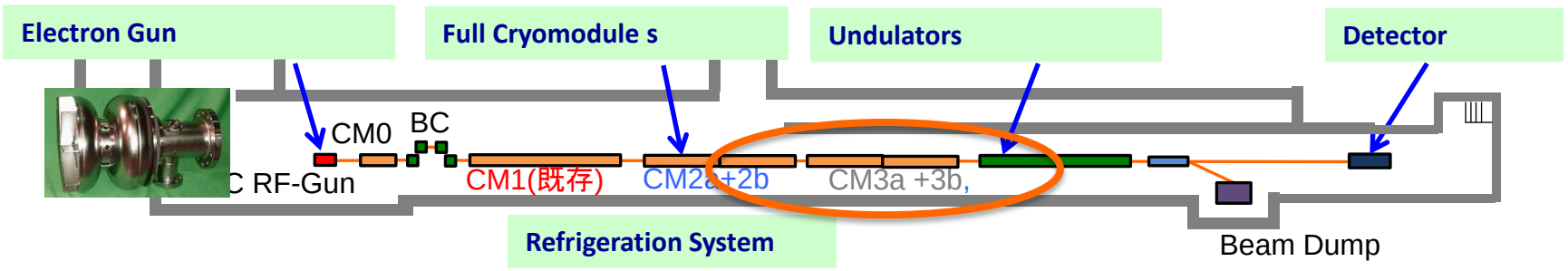
・Better efficiency power sources

・SCRF electron gun

・Training for next generation s

Proposal:

- Multiple Cryomodule for system study
- In-house Cavity to be installed in cooperation with industry
- Wide range application including Photon Science

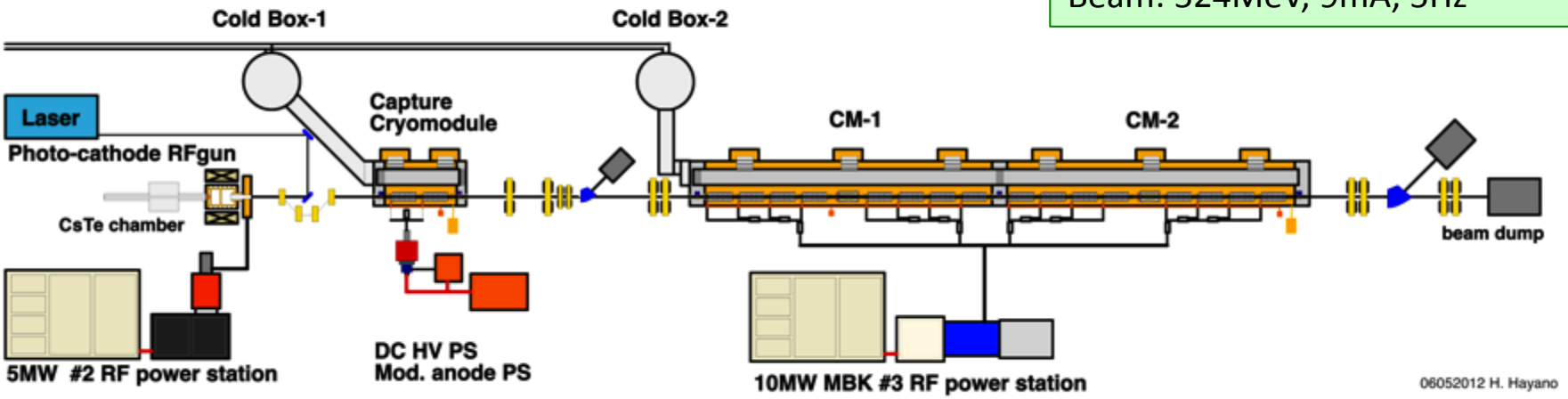


Undulator

H. Hayano

STF phase 2

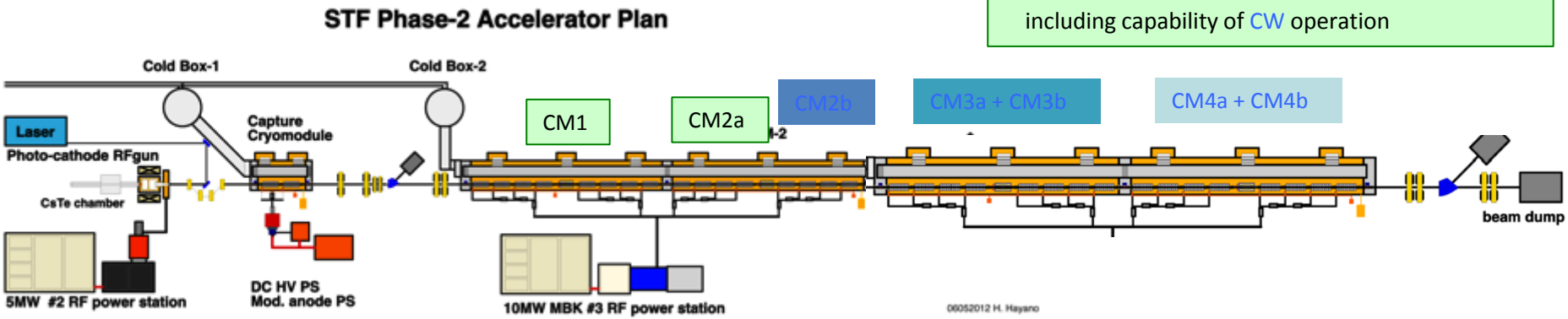
Cavity/CM: 2+8+(4+4)
Beam: 524MeV, 9mA, 5Hz



57m

STF phase 3 (New Possibility 1)

Cavity/CM: 2+8+(4 +4)+(4+4)+…
(max. capacity in current tunnel: 2 +32)
Beam: 1.0GeV max, 9mA, 1ms, 5 Hz
including capability of CW operation



STF phase 2 — 50m

STF phase 3 — 35m

H. Hayano

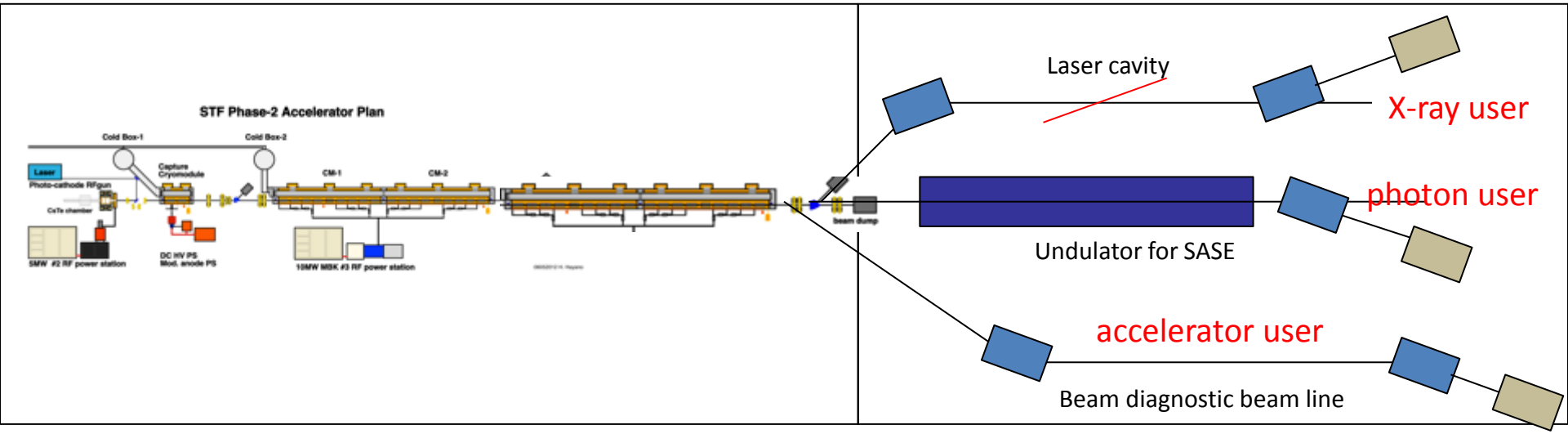
SCRF Acc. R&D + User Facility: Possibility 1

STF Phase 3 + Quantum-Beam 2 : under discussion

Tunnel extension required

1GeV SC-LINAC

Beam Facility:
- Inverse-Compton X-ray
- Undulator SASE photon
- Beam diagnostic development



Existing tunnel

STF phase 2+ phase 3

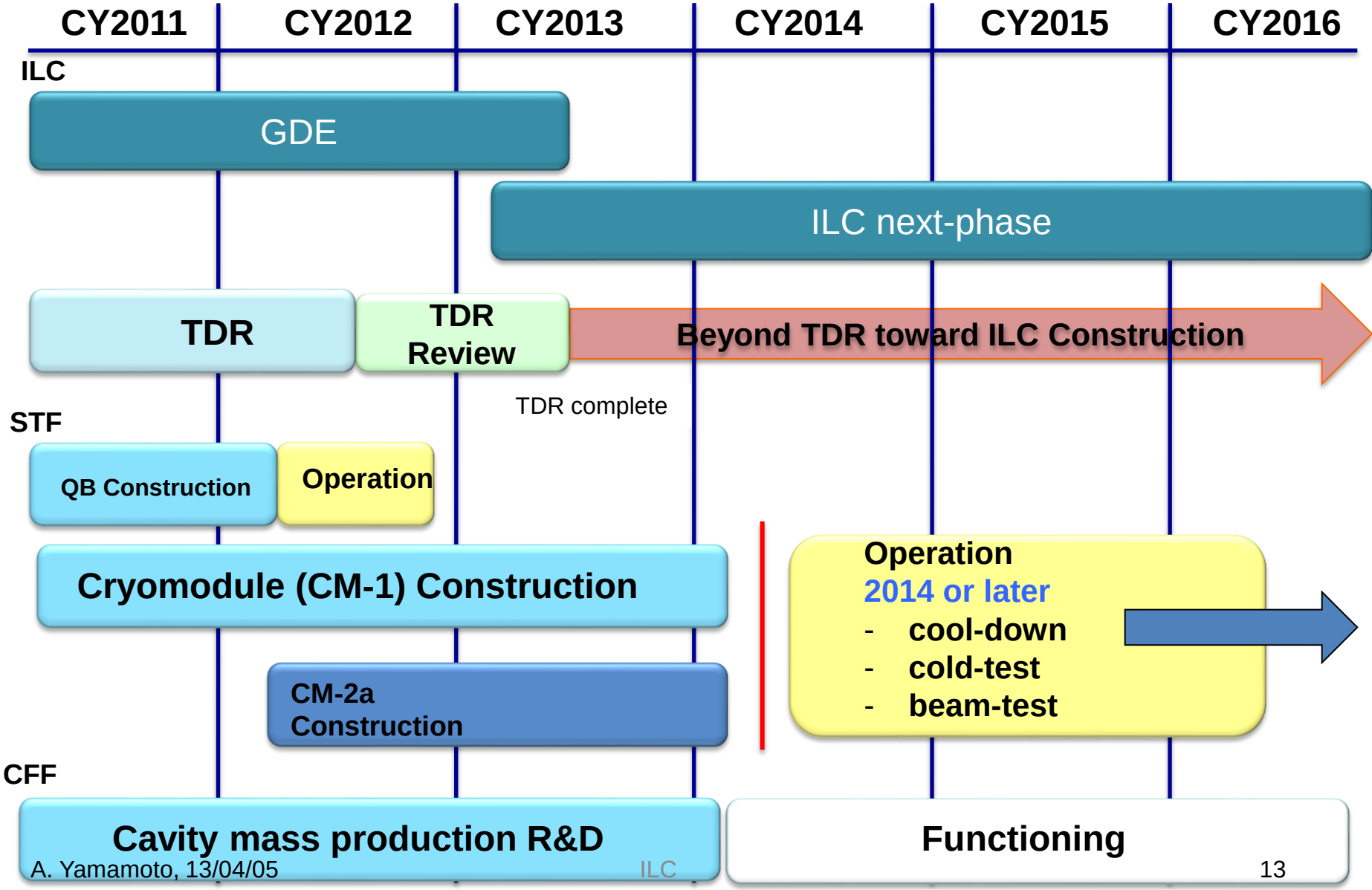
85m

Extension

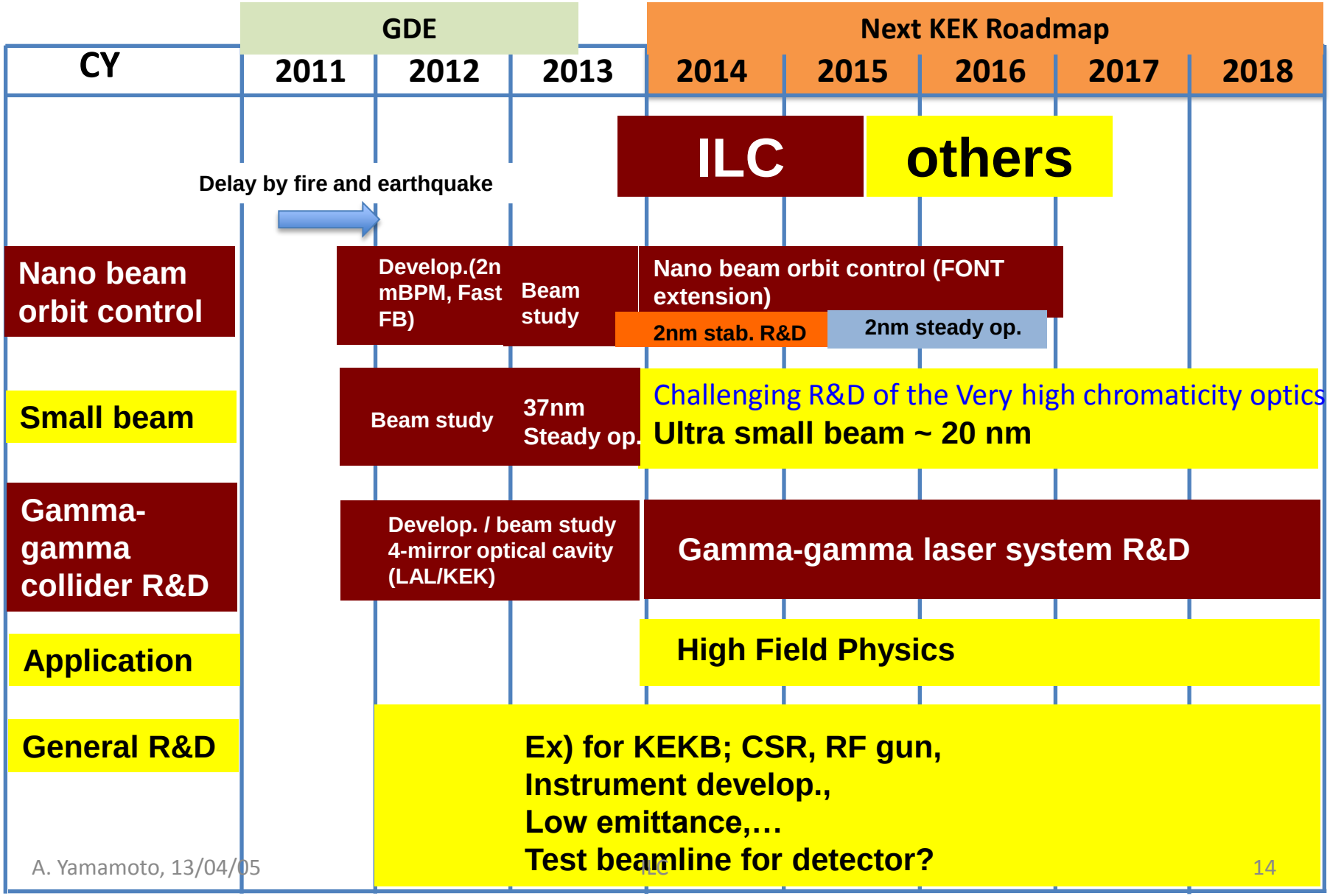
STF Quantum-Beam 2

80m

Plan of STF R&D beyond TDR

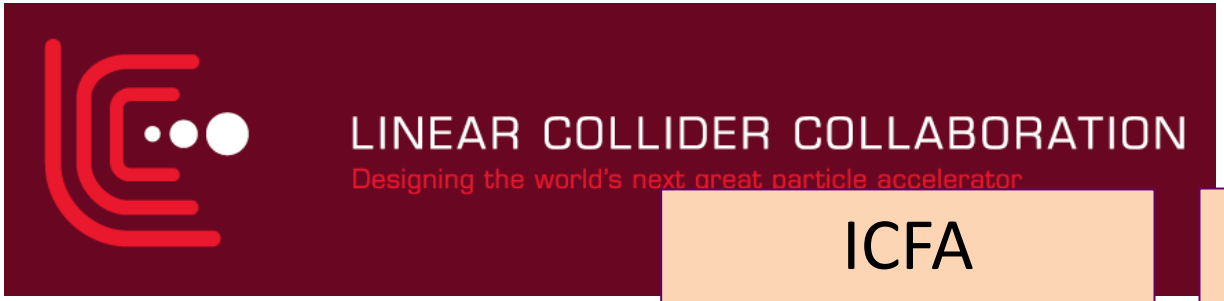


ATF Future Plan



Further Possibility

- A new budget is anticipated
  - Facility for Center of Innovation (COI)
    - A facility for Cryomodule Assembly and General Test station is anticipated to be built, in cooperation with Japanese industries.
    - We will expect more industrial partnership
  - We need to receive “operational funding”, including human resources.
  - Further information will be available hopefully within a month.
  - I will ask Hitoshi to be more practically in charge of this further activity as the deputy head of LC project office.



ICFA
Chair: P. Odone

FALC
Chair: Y. Okada

Program Advisory Committee

Linear Collider Board
Chair: S. Komamiya

Linear Collider Collaboration

Regional Advisors
TBA

Directorate
– Director: L. Evans

- Deputy (Physics)
H. Murayama

ILC
– Mike Harrison
- Deputy: H. Hayano

CLIC
– S. Stapnes

Physics & Detectors
– H. Yamamoto