

ECFA linear collider physics and detector study (status report June-2016)



LINEAR COLLIDER COLLABORATION



Juan A. Fuster Verdú, IFIC-Valencia

Plenary ECFA Meeting, Gran Sasso 30th June- 1st July 2016

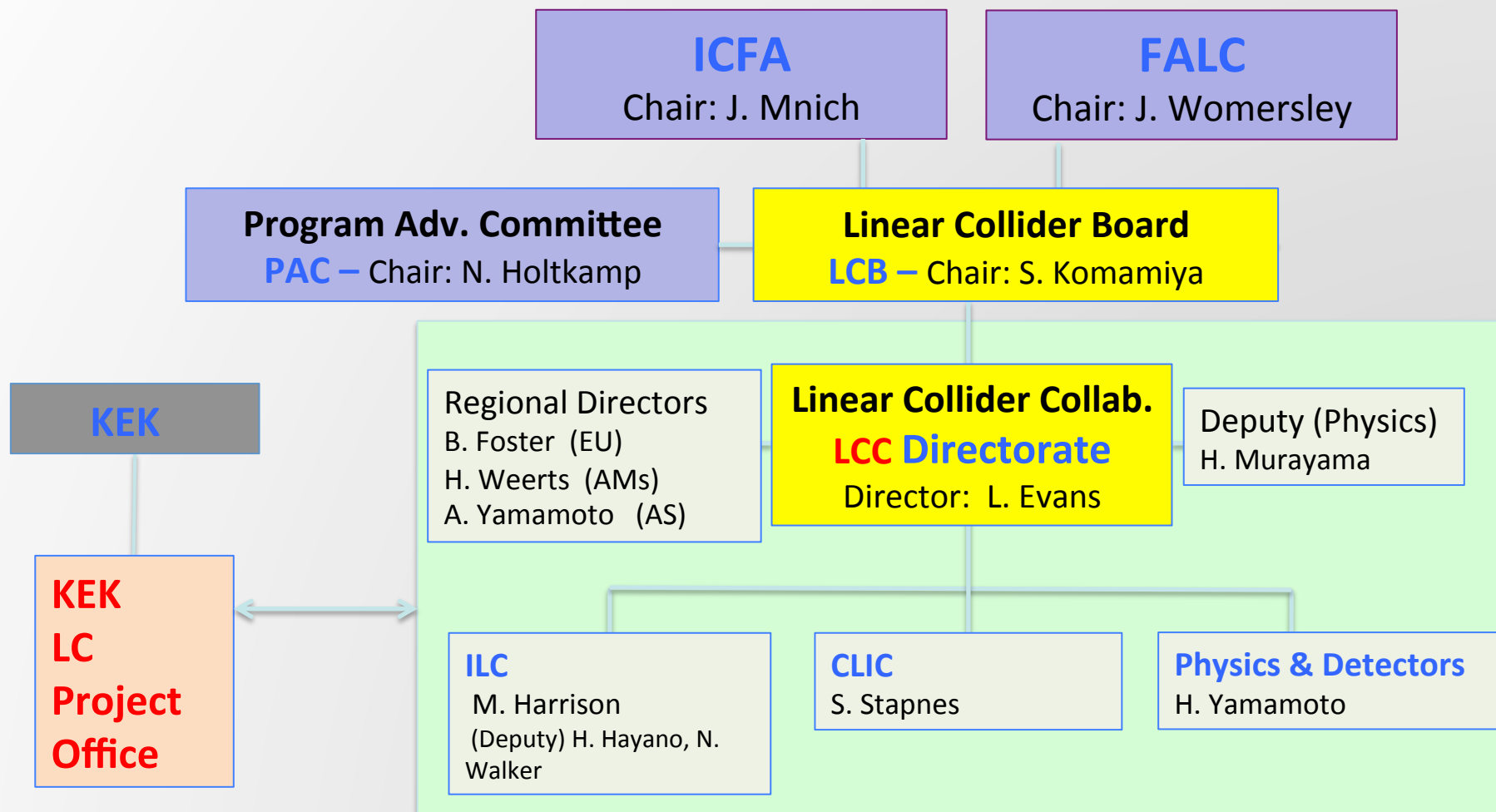
Thanks for providing material and discussions to:

T. Behnke, Ph. Burrows, J. List, F. Sefkow, S. Yamashita,
H. Yamamoto, M. Yamauchi

- The LCC structure, (end-extension of mandate)
- Situation of ILC in Japan
- No discussion today on ILC/CLIC accelerator and detector/physics R&D activities and highlights. To be presented during November PECFA meeting at CERN.
- European grants, an essential contribution for present LC activities
- Conferences 2016
- Summary



The Linear Collider Collaboration





The Linear Collider Collaboration

February 25-26, 2016, KEK Tokai Campus

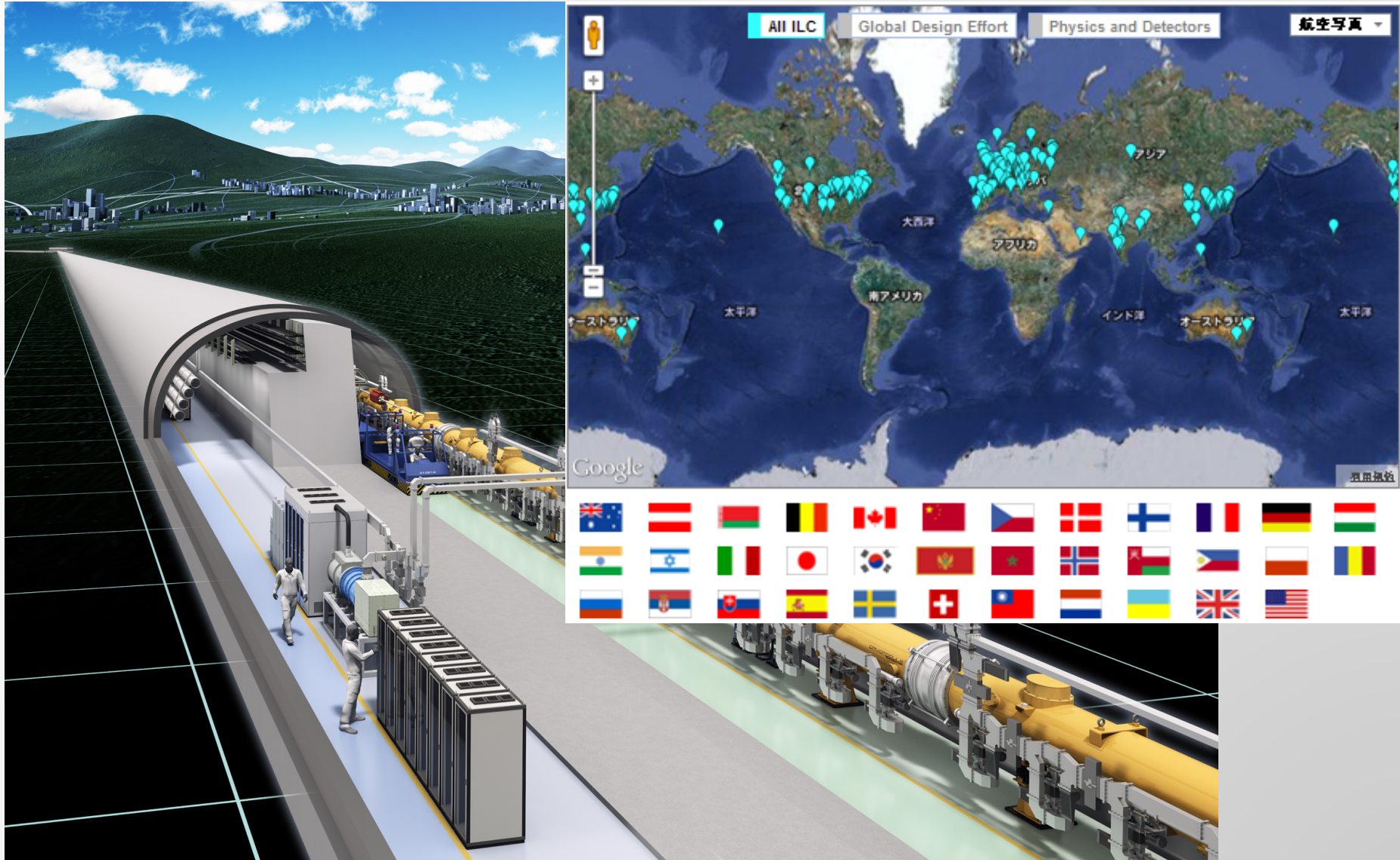
- At the recent 76th ICFA meeting, the committee discussed how to keep the ILC effort beyond the current mandate of LCB which was extended to the end of 2016.
- The committee decided that the international effort, led by ICFA, for an ILC in Japan should continue and set up a subgroup that will work on a new mandate and structure, to be proposed at the next ICFA meeting in August 2016.
- **Subgroup composition:** J. Mnich (DESY-ICFA), F. Gianotti (CERN), N. Lockyer (Fermilab), M. Yamauchi (KEK)



Press conference in Tokyo after the ICFA meeting



ILC in Japan

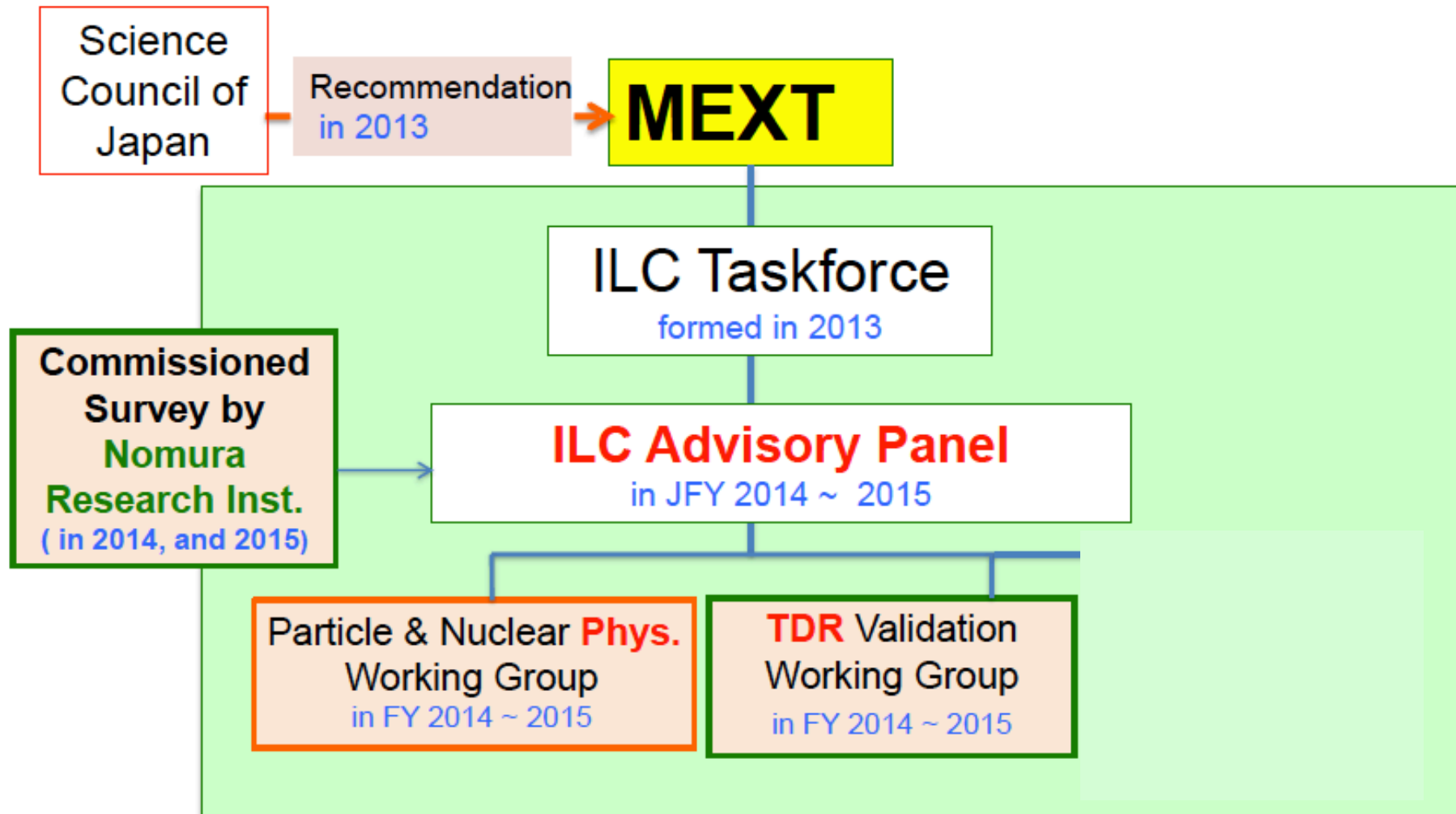




Japan: MEXT and Japanese Government towards ILC

S. Komamiya (LCWS 2015)

ILC being studied officially by the MEXT Japan

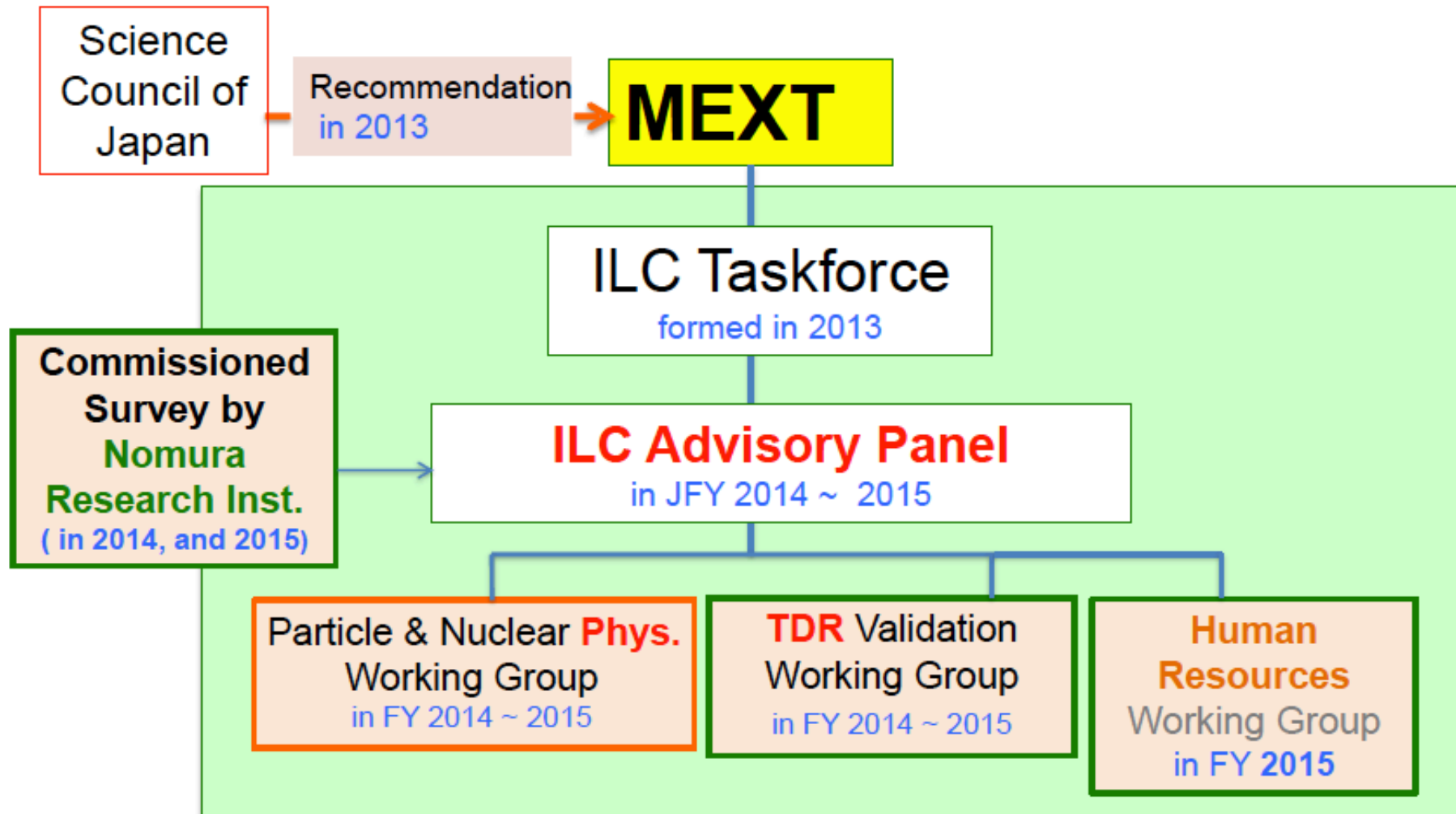




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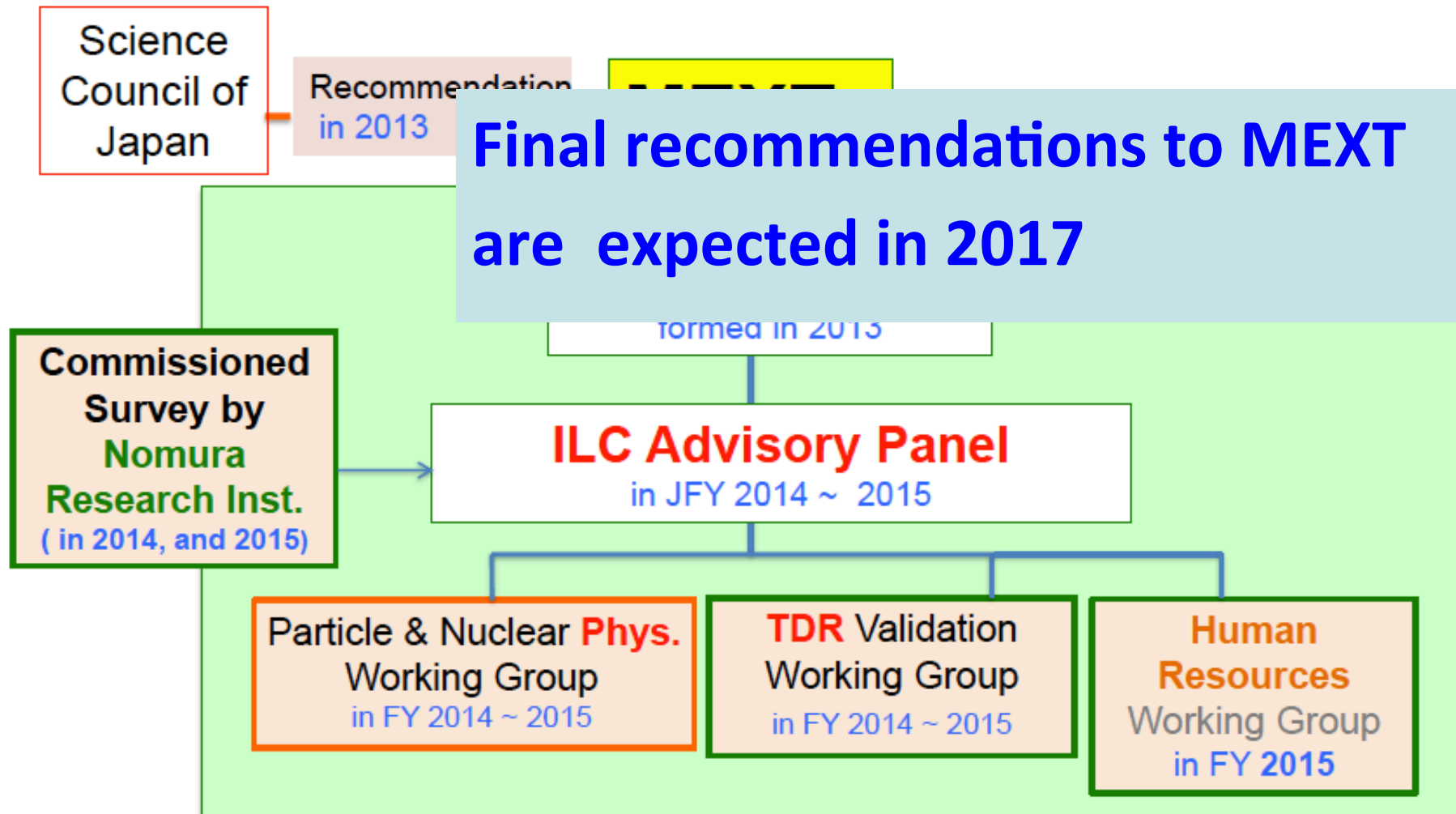
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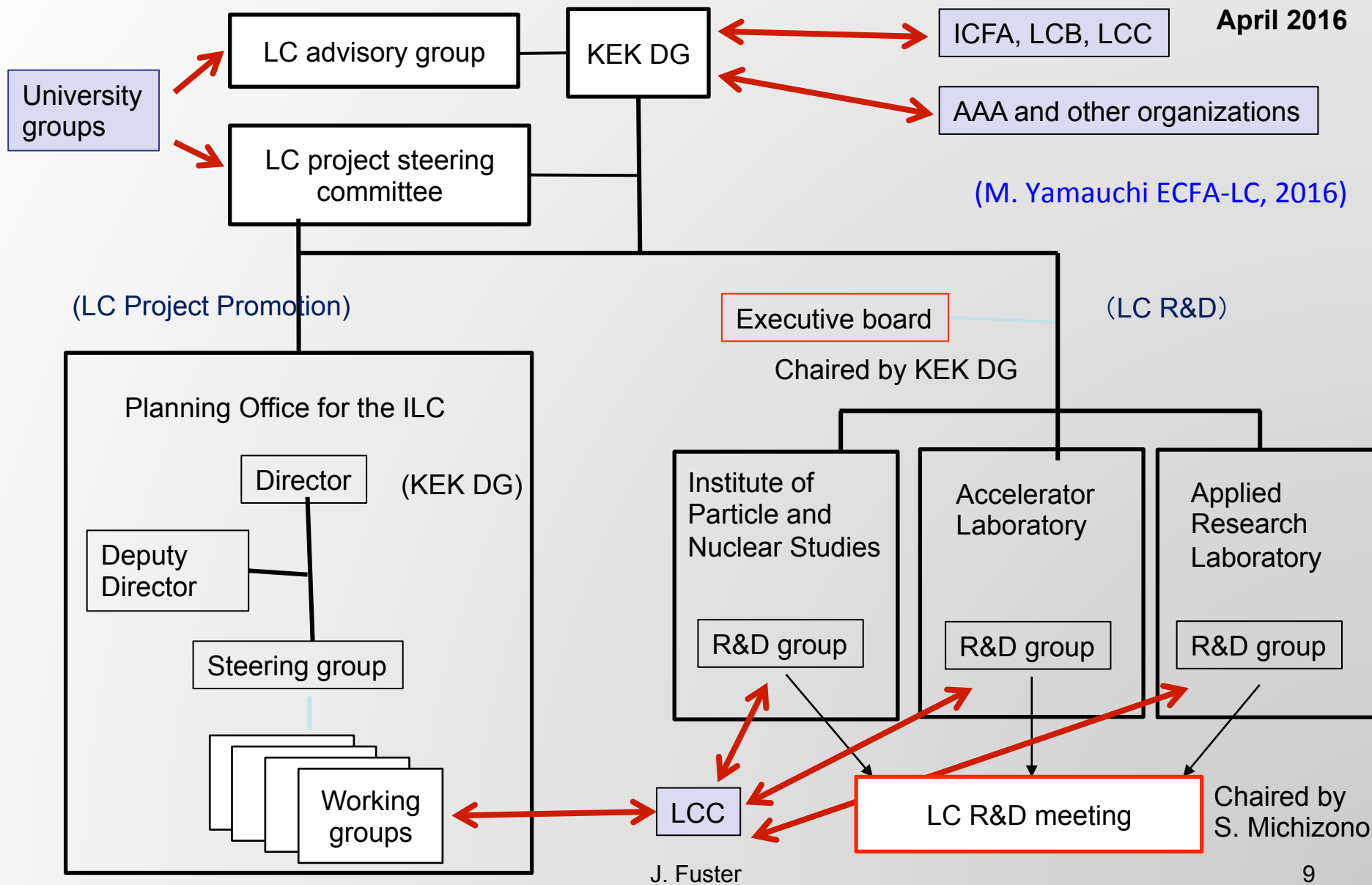
Japan: Interim report from ILC panel and triggered actions

M. Yamauchi (ECFA-LC 2016)

- **“Summary of Discussions” released by the ILC Advisory Panel (August 2015).
Interim Report:**
 1. Recommendation 1: Share the cost internationally and Find a clear vision on the discovery potential of new particles.
 2. Recommendation 2: Closely monitor and analyze the development of the LHC experiments and Mitigate cost risk.
 3. Recommendation 3: Obtain general understanding by the public and science communities.
- **Triggered actions enabled by the Interim Report:**
 1. The Panel started a new sub panel on human resources, which will study how to secure and train researchers and engineers necessary to construct ILC. This will continue until summer 2016.
 2. Start international pre-negotiations

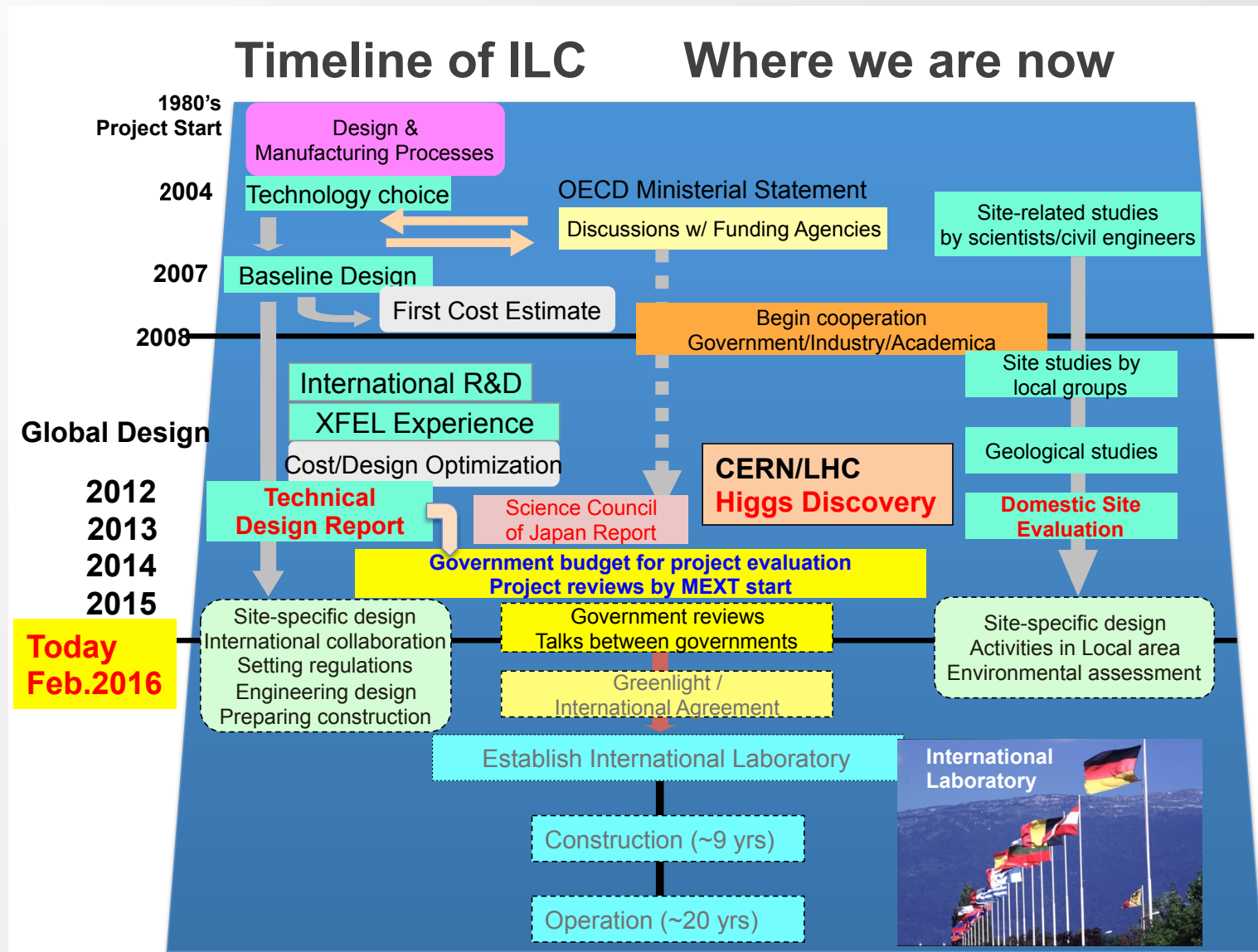


Reformation of ILC and project promotion at KEK





The ILC in Japan: political situation (S. Yamashita)





Activity bodies in Japan for ILC

■ 6 bodies

1. Japanese **Researchers HEP society and KEK**
2. **Federation of Diet members supporting ILC**
3. **MEXT**: Ministry of Education, Sports, Culture, Science and Technology
4. Japanese **Embassy** (in US, EU countries, EC, Asia, Russia,,), and **Ministry of Foreign Affairs**
5. Advanced Accelerator Association promoting Science and Technology (**AAA**) **Industry-Academia**
6. **MOVES**: Policy makers, top-level opinion Leaders, executives of BIG Industry, Local Bodies in **Tohoku** (bureau of Economy, business association, prefecture/city local governments, Universities).



Multilateral vs Bilateral

First try through multilateral discussion in 2013, but not successful.

- Multilateral is ideal but needs coherent moves and ground-work preparation in all countries at once.
- US likes bi-lateral rather than multilateral.
- EC (European Commission) and CERN would be the ideal coordination body for Europe. But EU Countries need individual (bi-lateral) discussion at the initial phase.

→ ~~Switch from Multilateral to Bilateral since 2014:~~

- **US-Japan first, then expand to European countries, Russia, Asian countries and other nations / regions**



Steps

1. International concept and international (2004-2013) investment on key technology ~500 M US\$ in total in world
2. **BIG Prototype = Euro-XFEL(EU), LCLS-II (US), ATF(Japan)**
3. **GDE CDR(2007) → Technical Design complete (2013) → LCB/LCC**
4. **LCB/LCC successfully facilitated official process in Japanese government**
5. **Japanese Government:** MEXT official reviews and investigations (2014→)
6. **Government-to-government:** discussions on issues and preparations
(Now): **NEED prospects** (no commitment yet) of **the international sharing of the cost, human resources, technology.**
7. **LHC run2 results (~2018)** to be continuously monitored (to determine max energy = project scope/definition as the governments), Government-government, processes in MEXT, MOFA, eventually MOF (finance)
8. A **decision** to proceed by the government cabinet (Prime Minister) backed by partner countries' prospects → Official Negotiations for **sharing**
9. International agreement → **International approval**



Recent diplomatic actions in 2016

- Germany:
 - G7 S&T Ministers forum (May) → KEK visit
 - Political interactions at Inter-Parliament Union (IPU) → Preparation for Oct. 2016 (in Geneva)
- France:
 - IEEE(@Strasbourg in Oct-Nov. 2016) preparation and cooperation with AAA (May 27th)
- Canada, Italy:
 - G7 S&T Ministers forum (May) → KEK visit
- Spain:
 - Spanish Embassy in Tokyo (13th May 2016)
 - MoU between INEUSTAR and AAA
- India:
 - India-Japan forum (A.Suzuki)
 - Inter-university and KEK (→ see KEK DG Yamauchi's slides)
- Austria
 - Minister visit to KEK



The ILC in Japan: Japan-India

M. Yamauchi (ECFA-LC 2016)

Representatives from KEK and 10 Indian accelerator labs had a meeting to discuss Indian involvement in ILC.

“The members strongly supported that the accelerator and the high energy physics communities of India will jointly submit a proposal to the Indian Government stating that they would like to be a part of the ILC project.” (Minutes of the meeting on April 29, 2016 at IUAC)

Agreement to:

set up “Indo-Japan Centre for Accelerators and Detectors” in Benaras Hindu University as a base of Indian participation in ILC.



April 29, 2016, IUAC, Delhi



The ILC in Japan: Japan-Spain

Assistance:

88 managers, scientists and executives from relevant Japanese and Spanish organizations (scientific installations, universities, industrial companies, associations and public administration).

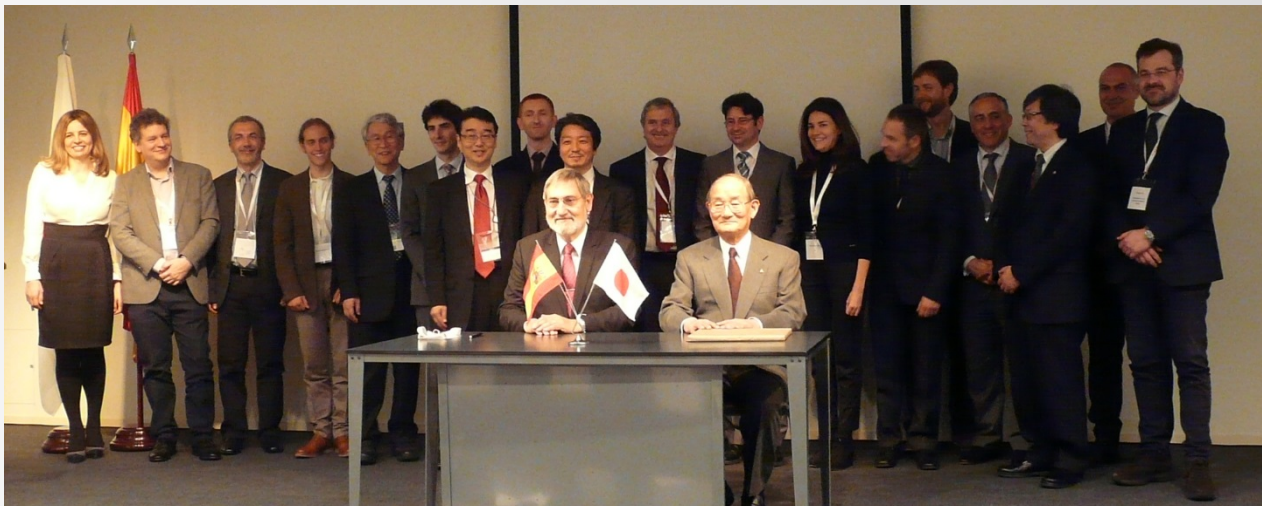
F.J. Cáceres (ECFA-LC 2016)

A fair representation of the most relevant Spanish and Japanese organizations related with accelerators and fusion projects participated in the workshop.





Signature of MoU between AAA and INEUSTAR, to continue exploring joint collaboration opportunities





US-JAPAN

We need **Scenario-C case** in US P5 report for ILC

- US P5: HL-LHC, LBNF(DUNE), then ILC

Scenario-C HEP budget, How can it happen? (our view)

■ **Government support**

- DOE Office of Science & OSTP
- President election 2016 Nov.

■ **Congress support**

- S&T related committee members, Appropriation Committee members.
- There is active move in Congress members team(s) to **double the basic science budget in US**, Hon. Alexander, Hon. Murkowski, et al.

■ **+ For ILC, one more politics: deepening US-Japan alliance with S&T**

- Japan Caucus (~80 members) in House of representatives
- Japan Study group (Senate, House, private sectors, Univ.)



The ILC in Japan: political situation (S. Yamashita)

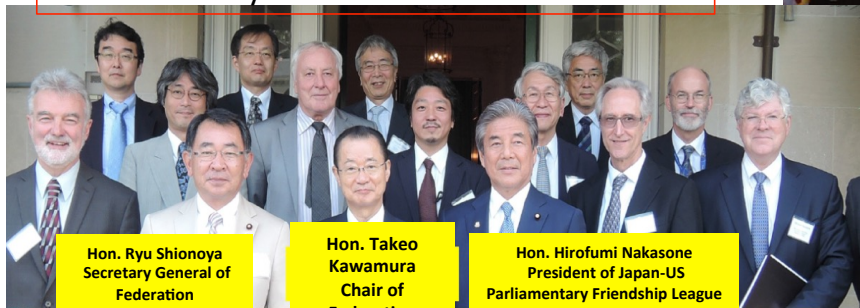
Japan-US Discussions at the Political Level

- April 30 2013 at Washington DC: Symposium on Advanced Science and Technology centered on the ILC
 - MEXT Minister, Secretary of Energy US, Federation of Diet members of Japan for ILC
- January 2014, MEXT Minister met with Dr.Monitz (Secretary of Energy) at Washington DC
- July 2014, Federation of Diet members visited Washington
- Apr.2015, Federation of Diet members visited Washington

1st US Visit by federation of Diet Members of Japan for ILC



2nd US Visit by Federation of Diet Members



Hon. Ryu Shionoya
Secretary General of
Federation

Hon. Takeo
Kawamura
Chair of
Federation

Hon. Hirofumi Nakasone
President of Japan-US
Parliamentary Friendship League

3rd US Visit by Federation of Diet members





The ILC in Japan: political situation (S. Yamashita)

Progress (1) (Oct. 7 2015 – Feb. 10 2016)

2015

- Oct.7: **KEK-DOE agreement** including US-Japan R&D on ILC in the framework of US-Japan governmental-level high-level S&T discussions
- Dec.4: **Meeting with MEXT Minister Hiroshi HASE**
 - Hon. Takeo KAWAMURA (ILC-Fed. Chair), Hon. Ryu SHIONOYA (ILC-Fed. Sec.-Gen.), Mr. Takashi NISHIOKA (AAA Chair)
- Dec.10: Hon. Takeo KAWAMURA (ILC-Fed. Chair) visit to Washington DC
 - Discussion with US Congress Members, agree to hold **US-Japan S&T Forum on ILC / Space / etc.**

2016

- **Feb. 9: US-Japan S&T Forum (Washington. DC)**
 - Hon. Ryu SHIONOYA (ILC-Fed. Sec.-Gen.), Hon. Shun-ichi SUZUKI (ILC-Fed. Vice Chair), Hon. Taku OTSUKA (ILC-Fed. Vice Exec. Officer), Hiroshi IKUKAWA (MEXT, Research Promotion Bureau, Deputy Director-General), Tohoku Economic Federation Members, Mr. YAMURA (Iwate ILC Promotion Association Chair), Scientists from US and Japan.
 - **Meeting with US Congress members: US-Japan Caucus members and others, agreed to enhance US-Japan cooperation in S&T**
- **Feb. 10: Meeting with Dr. Cherry Murray (DOE Office of Science Director)**
 - DOE Associate Director for HEP Dr. James Siegrist + others, Hon. Ryu SHIONOYA (ILC-Fed. Sec.-Gen.), Hon. Shun-ichi SUZUKI (ILC-Fed. Vice Chair), Hon. Taku OTSUKA (ILC-Fed. Vice Exec. Officer), Hiroshi IKUKAWA (MEXT, Research Promotion Bureau, Deputy Director-General), Embassy of Japan, Scientists.
 - **DOE proposed a joint "Discussion Group" for ILC**



The ILC in Japan: political situation (S. Yamashita)

June 1, 2016: Executive Meeting of Federation of Diet Members for ILC

Attending executive members:

7 Diet members (executive members)

From MEXT:

Yayoi KOMATSU (Director, Research Promotion Bureau),

Hiroshi IKUKAWA (Deputy Director-General, Research Promotion Bureau),

Masami WATANABE (Director, Basic Research Promotion Division, Research Promotion Bureau),

Sadahiro HAGIWARA (Director for Particle and Nuclear Physics Promotion Office, Basic Research Promotion Division, Research Promotion Bureau) +others

Scientists: Sakue Yamada, Toshinori Mori, Tadashi Ishikawa, Tomohiko Tanabe

AAA: Jun-ichi NISHIYAMA



Agenda

- **Report by MEXT on MEXT-DOE meeting on May 25**
- Discussions and recommendations by Diet members
- Remarks by scientist (Toshinori Mori, as P5 committee member)

Confirming and Conclusions of the meeting

- **The next meeting of the MEXT-DOE Discussion Group should be held in July/August.**
- **By October this year, items on joint research should be identified and concluded, in time for the next round of budget request (Japan JFY2017, US FY2018)**
- **Discussion Group's planning should include researchers and industry for concrete R&D planning.**



Growing Support and ongoing studies
in local regions

- Very active efforts by local government, Universities, business groups, companies for preparation of ILC
- Progress in mapping (potentially) accelerator-related companies
- **Wide-area regional/urban development: specific proposals** (Multiple blueprints→synergy with ILC project)
- **Regional economic effects** (Estimates by university and private sector)



The ILC in Japan: media and social impact



Oshu City



Ichinoseki Station



Morioka



Tohoku tourism ad seen on Tokyo Metro



Posters and "Toy ILC" by school children of Oshu City welcoming international workshop on ILC



TIMING of the CONSTRUCTION PEAK

Construction period should care:

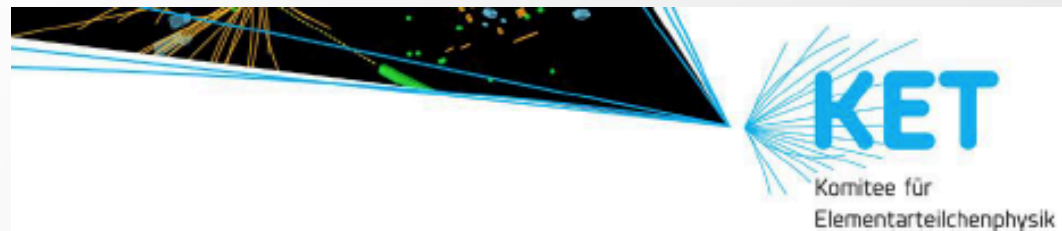
- the Olympic game 2020 in Tokyo (for Japan)
- Careful adjustment of the international budget profile not to overlap with cost peak of High Luminosity upgrades of LHC (especially for EU), and Neutrino program(s) (especially for US) (also human resources)
- Also with S&T big project in other area,
notable example) ISS international Space station, ITER



AsiaHEP/ACFA Statement on ILC + CEPC/SPPC

AsiaHEP and ACFA reassert their strong endorsement of the ILC, which is in a mature state of technical development. The aim of ILC is to explore physics beyond the Standard Model by unprecedented precision measurements of the Higgs boson and top quark, as well as searching for new particles which are difficult to discover at LHC. The Higgs studies at higher energies are especially important for measurement of WW fusion process, to fix the full Higgs decay width, and to measure the Higgs self-coupling. In continuation of decades of world-wide coordination, we encourage redoubled international efforts at this critical time to make the ILC a reality in Japan. The past few years have seen growing interest in a large radius circular collider, first focused as a "Higgs factory", and ultimately for proton-proton collisions at the high energy frontier. We encourage the effort lead by China in this direction, and look forward to the completion of the technical design in a timely manner.

[Y. Wang, FCC-Rome 2016, KET future e+e- colliders](#)



Conclusions of the

KET Workshop on Future e^+e^- Colliders^a

Max-Planck-Institut für Physik Munich, May 2-3, 2016

1. The physics case for a future e^+e^- collider, covering energies from M_z up to the TeV regime, is regarded to be very strong, justifying (and in fact requiring) the timely construction and operation of such a machine.ⁱ
2. The ILC meets all the requirements discussed at this workshop.ⁱⁱ It is currently the only project in a mature technical state. Therefore this project, as proposed by the international community and discussed to be hosted in Japan, should be realised with urgency. As the result of this workshop, this project receives our strongest support.ⁱⁱⁱ
3. FCC-ee, as a possible first stage of FCC-hh, and CEPC could well cover the low-energy part of the e^+e^- physics case, and would thus be complementary to the ILC.^{iv}
4. CLIC has the potential to reach significantly higher energies than the ILC. CLIC R&D should be continued until a decision on future CERN projects, based on further LHC results and in the context of the 2019/2020 European Strategy, will be made.

Topic	CEPC	FCC-ee	ILC	CLIC
Higgs Mass, couplings	+	+	+	+
Higgs self-coupling	-	-	+	+
Top physics	-	+	+	+
ew- precision parameters	+	+	+	-
BSM (direct searches)	-	-	+	+
Flexibility to new high mass signal	-	-	-	+
Maturity of project	-	-	+	-
Start by/before 2035	+	-	+	-



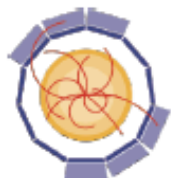
EU-H2020 support for LC detector/accelerator R&D

F. Sefkow (ECFA-LC 2016)



E-JADE

- Scientific Exchange
- Accelerator development



AIDA2020

- Integrated Infrastructure Initiative
- Detector development

Thank you to Thomas Schörner-Sadenius for providing the E-JADE material!



EU-H2020 support for LC detector/accelerator R&D

F. Sefkow (ECFA-LC 2016)

E-JADE is a Marie Skłodowska-Curie Research and Innovation Staff Exchange (RISE) action, funded by the EU under Horizon2020

RISE

- **Research and Innovation Staff Exchange**
- **Support for mobility:**
 - ~4500 € per secondment of 30 days, 2000 for trip
- E-JADE period: 2015-2018
- E-JADE budget: 367 secondment months, ~1.6 M€
- Coord: CERN / S.Stapnes (T.Schöner-Sadenius *interim*)



東京大学
THE UNIVERSITY
OF TOKYO



KEK-JAPAN



CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS



ROYAL
HOLLOWAY
UNIVERSITY
OF LONDON

Beneficiaries must have a contract with one of the 7 partners

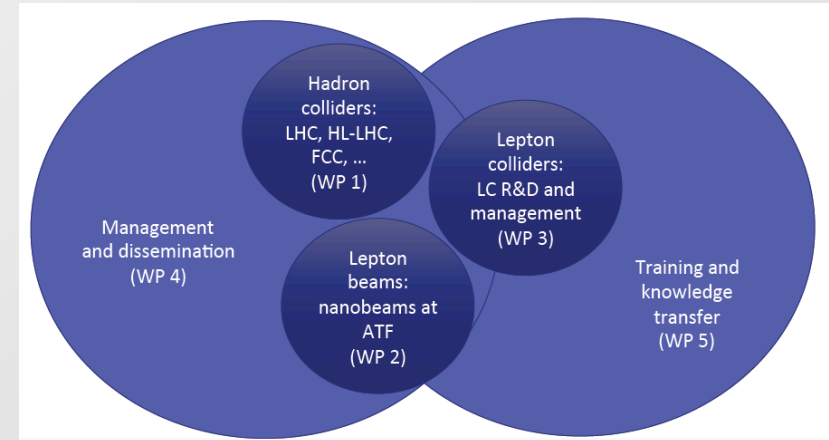


EU-H2020 support for LC detector/accelerator R&D

F. Sefkow (ECFA-LC 2016)

Status and Outlook (mid-term review):

- Excellent opportunity to promote Europe-Japan collaboration
- Test-bed for large common projects
- Scientific work packages well on track

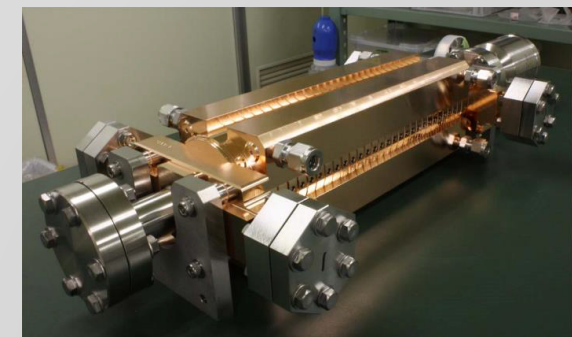
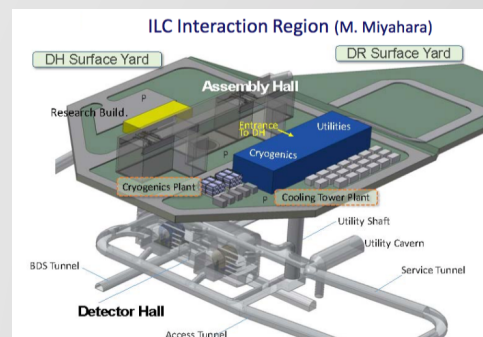


WP2: ATF2 & LC – Test Facility at KEK

ATF2 beamline: Nano-meter beam R&D
Final focus system development
Technologies to maintain the luminosity at ILC
Beam size: 37 nm (design), 44 nm (achieved)
Beam stabilization via feedback: achieved 67 nm
Beam instrumentation development

WP3-Lep.Coll.: ILC site specific issues-MDI

WP3-Lep.Coll.: CLIC optimization using ATF2





EU-H2020 support for LC detector/accelerator R&D

F. Sefkow (ECFA-LC 2016)

- Integrated infrastructure initiative in EU FP8 “Horizon 2020”
 - Following success of EUDET and AIDA
- “infrastructure” = common interest
- Duration: 1.5.2015 – 30.4.2019
- EU contribution 10 M€
- Total budget 29.7 M€
- ~ 50 % LHC, ~25 % LC, ~25 % general
- LC community meeting Oct 2013, LAL
- Coordinating institute: CERN
- Scientific coordinator L.Serin (LAL) (-30.4.2016), F.Sefkow

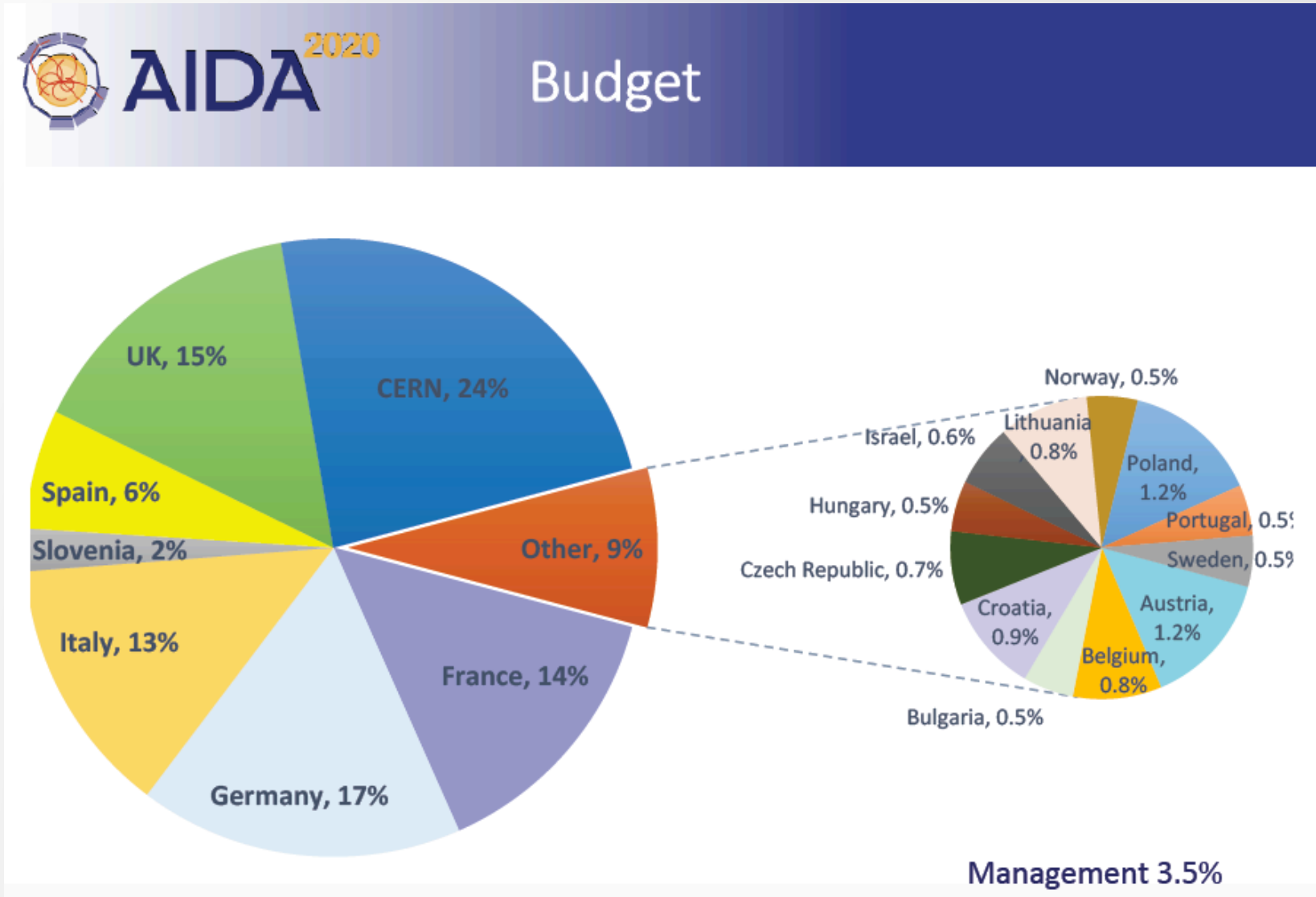


<https://aida2020.web.cern.ch>



EU-H2020 support for LC detector/accelerator R&D

F. Sefkow (ECFA-LC 2016)





EU-H2020 support for LC detector/accelerator R&D

F. Sefkow (ECFA-LC 2016)

AIDA²⁰²⁰

First Annual Meeting

13-17 June 2016, DESY, Hamburg, Germany

AIDA-2020 (Advanced European Infrastructures for Detectors at Accelerators) is co-funded by the European Commission within the Horizon 2020 Research Infrastructures call.

Organising committee :
Frank Gaede, Natalia Potylitsina-Kube, Felix Sefkow, Marcel Stanitzki (DESY)
Paolo Giacomelli (INFN), Laurent Serin (ONRS),
Svet Stavrev, Livia Lapadatesou, Sabrina El Yacoubi (OERN)

Energy and time measurement with high-granularity silicon devices

Monday 13 June, 14:00 - 18:00
Tuesday 14 June, 9:00 - 12:00

Scientific organising committee :
Marcello Mannelli (CERN),
Roman Pöschi (CNRS),
Abraham Seiden (Santacruz)



EU-H2020 support for LC detector/accelerator R&D

An application to the EU-RISE program, called RANDALF, was re-submitted in April 2016. This included LC detector, software and physics R&D activities involving exchanges between Europe and Japan/USA. Results to be known by August 2016.

Support from ECFA to LC activities is acknowledged by the community

ECFA/16/453/Draft
Draft approved by RECFA, to be endorsed by PECFA
3 April 2016

ECFA EUROPEAN COMMITTEE FOR FUTURE ACCELERATORS

ECFA STATEMENT ON THE DETECTOR R&D ACTIVITIES AND PHYSICS STUDIES
FOR A FUTURE LINEAR COLLIDER IN THE CONTEXT OF THE EUROPEAN
STRATEGY

After the discovery of the Higgs Boson in 2012 at CERN, Europe, the United States and countries represented in the Asian Committee for Future Accelerators (ACFA) have produced strategies for the future of accelerator-based particle physics. Altogether a coherent vision emerges of a roadmap for the next 20 years, endorsed by the International Committee for Future Accelerators.

The European Strategy ranks the full exploitation of the physics opportunities at the LHC and its future upgrades as Europe's top priority. It recommends a vigorous accelerator R&D programme to develop an ambitious post-LHC project at CERN at the high-energy frontier. These studies comprise proton-proton and electron-positron high-energy machines. The impressive scientific case for a lepton collider is recognised and both the International Linear Collider (ILC) and R&D towards the Compact Linear Collider (CLIC) are strongly supported. The strategy also recognises the importance of global cooperation on neutrino physics.

The implementation of these recommendations has led to the establishment of the Future Circular Collider (FCC) project, the CERN-KEK offices and the CERN Neutrino Platform. The role of the CERN-KEK offices is to increase the collaborative effort between CERN and KEK on accelerator R&D and construction projects of mutual interest. The goal of the CERN Neutrino Platform is to facilitate the contribution of the European neutrino community to the planned US and Japan projects, in particular through a significant R&D effort.

The conceptual design report for CLIC was produced in 2013. A Project Implementation Plan is scheduled in time for the next update of the European Strategy, around 2019. For the Future Circular Collider a conceptual design report is expected by the same time, describing both e^+e^- and pp collider options. The Technical Design Report for the ILC was published in 2012 and the Japan Association of High Energy Physicists proposed that the ILC be hosted in Japan as a global project. The Japanese Government is currently considering the proposal and has started informal talks with the USA and European countries. A decision by Japan to host the ILC is expected within the next few years. The Asia-Pacific High Energy Physics Panel and ACFA have recently issued a statement urging redoubled international efforts to realize the ILC.

As a component of the global strategy, a strong effort to develop detector technologies for experiments at future collider facilities is needed. This should be complemented by comprehensive studies of the science reach of these facilities.

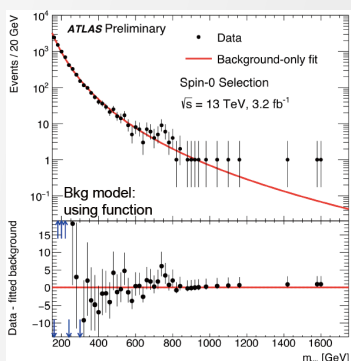
ECFA acknowledges the role of the ILC- and CLIC-directed research in this area and the significant technological contributions this effort has already produced. ECFA strongly supports the continuation of this work with an adequate level of funding until a decision on the future direction of the field is taken. In this context collaborative efforts between Europe, USA and Asian countries, especially with Japan, are encouraged.

ECFA encourages the establishment of close links between the linear collider and circular collider communities, to maximise synergies and the use of resources in preparation for the challenges of the future. ECFA recognises that the well-developed linear collider structures and community are assets to the field and should be maintained until a decision on the future direction of the field is taken.



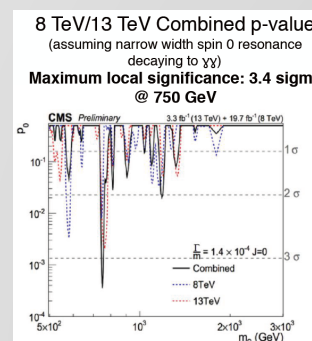
One session at ECFA-LC 2016 discussed X750 if confirmed:

- LC can elucidate the physics behind X750 by precision measurements on Higgs, top etc.
- LC may be able to discover new particles related to X750 within its energy reach
- With energies ~ 1 TeV and above, LC could produce X750 directly through e^+e^- at high energy or future $\gamma\gamma$ option
- LC provides excellent complementary to LHC (as has been advocated in general for most potential new findings at LHC)
- A summary report will be produced and available before ICHEP 2016



ATLAS:

13 TeV data, spin-0
2.0 σ (global) 3.9 σ (local)
Consistent with 8 TeV at 1.2 σ



CMS:

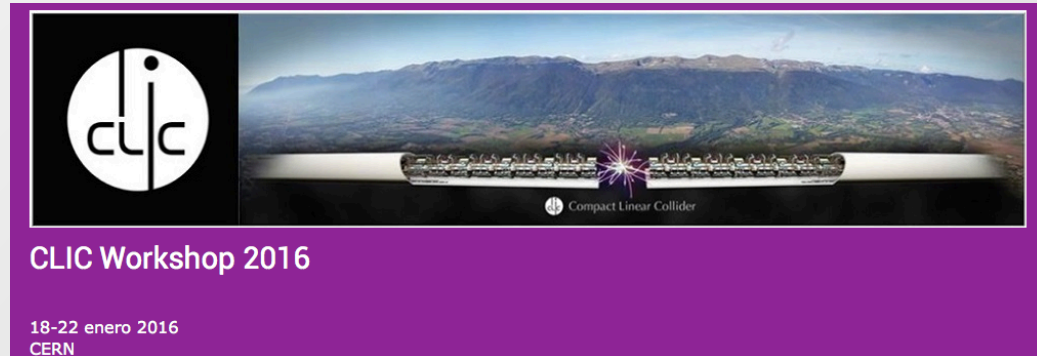
13/8 TeV data,
spin-0
3.4 σ (local at 750 GeV)



LC workshops 2016



- **CLIC workshop 2016, CERN, 18-22 Jan.**
<https://indico.cern.ch/event/449801/>



- **ECFA - Linear Collider Workshop 2016, Santander (Spain), 30 May – 5 June.**
<http://www.ifca.unican.es/congreso/ECFALC2016>
Local chair: Alberto Ruiz
“Omnibus” type workshop: Accelerator, ILD, CLICdp, SiD, R&D Collaborations, Plenaries, etc..



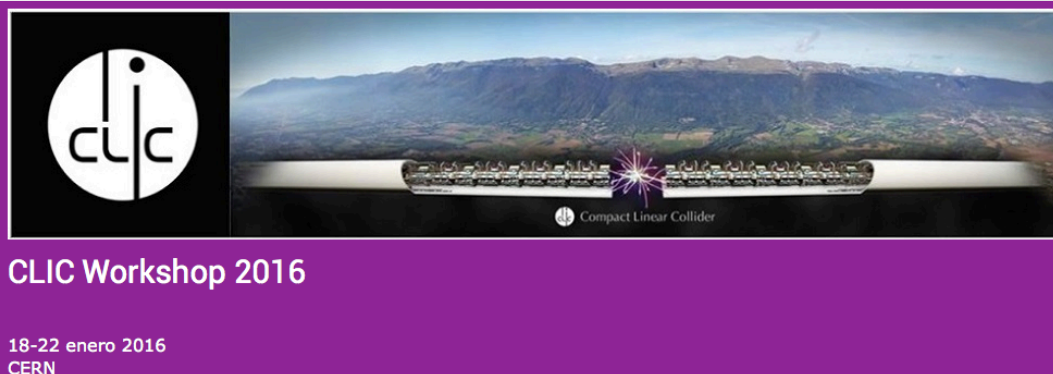
- **LCWS16, Linear Collider Workshop 2016, Morioka (Japan), 5-9 December**



LC workshops 2016



- **CLIC workshop 2016, CERN, 18-22 Jan.**
Accelerator, Detector R&D and Physics
Sessions: 14; Contributions: 166
Participants: 226; Countries: 20





LC workshops 2016



• ECFA - Linear Collider Workshop 2016, 30 May – 5 June Santander (Spain)

Local chair: Alberto Ruiz

“Omnibus” type workshop: Accelerator, ILD, CLICdp, SiD, R&D Collaborations, Plenaries, etc..

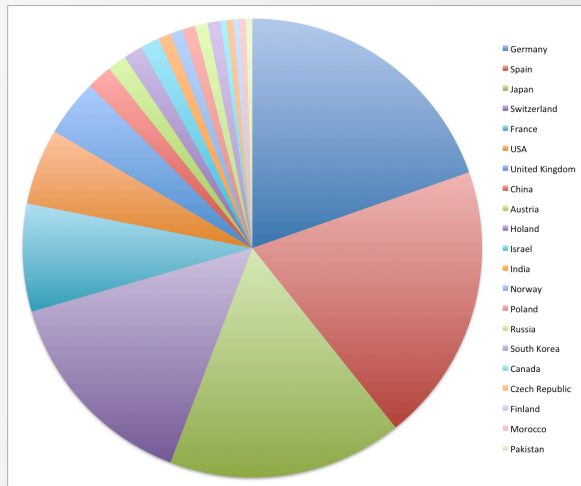
It included Industrial Forum Session

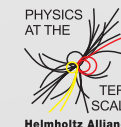
Presence of two Director Generals from the Ministry:

- Marina Villegas (DG of Scientific and Technological Research - MINECO)
- Isaac Martín Barbero (DG Industry Internationalization ICEX)

Sessions: 19; Contributions: 312

Participants: 224; Countries: 21 (US participation lower than usual)





Helmholtz Alliance

PHYSICS AT THE TERASCALE

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- **Linear Collider School, 21-27 July 2016**
Frauenchiemsee (about 100 Km from Munich)
<http://lcschool.desy.de>
Local Chair: G. Moortgat-Pick (Helmholtz Alliance)

- The school is aimed at PhD students and postdoctoral researchers working on linear collider research. The programme consists of lectures covering the following topics:

- Accelerators
- Detectors
- Standard Model
- Higgs
- Top physics
- Supersymmetry
- Relation to LHC Physics

6th Linear Collider School

An introduction to the physics of linear colliders

21 - 27 July 2016

Frauenchiemsee, Germany

Topics:

- Accelerators – concepts, technology and realisation
- Detectors and detector integration
- Higgs and electroweak physics
- Top physics
- Beyond-Standard Model physics

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For more information and registration go to:

www.terascale.de/lcschool2016

<http://lcschool.desy.de>





- The Linear Collider Collaboration (LCC/LCB) finished its mandate and a new structure needs to be setup during 2016. This new structure has to adapt to the situation and expected activities on the future of LC projects for the coming years.
- In 2016/2017 MEXT will announce the result of the studies and recommendations of the working groups with respect to built the ILC in Japan. Contacts between Japanese MEXT authorities and interested countries have started. Focus made to Japan-US.
- The physics programme of a future Linear Collider (ILC/CLIC) is extremely rich and attractive covering Higgs physics, top physics and searches beyond the SM complementary to LHC. The physics potential of the LC with respect to X750 (if real) has been studied and shown to be very powerful and complementary to LHC.



- The Linear Collider is a solid technological possibility “either” for the next accelerator at CERN (in the case of CLIC) “or” to provide the “best bridge” to the next accelerator at CERN after LHC (in the case of ILC).
- Progress on the Linear Collider physics case and detector R&D for both ILC & CLIC is being made despite the small funding and few resources. The community is very motivated and determined.
- Getting EU funding is crucial for the next years. ECFA/ACFA formal recognition and support to the LC activities are very welcome and acknowledged.
- Despite “no apparent noise” plenty of activities are going concerning LC, physics-wise and political-wise.



The ILC in Japan: political situation summary

Strong support from the scientific community (new structure at KEK to promote ILC)

Support from industry (private sector responsible for 80% R&D funding in Japan):

- >100 Companies, 40 Universities and Institutes, etc..

Support from government:

- Association of Diet Members to support the ILC (~150 Diet Members across all parties)
- ILC explicitly appears in the programme of LDP party
- Prime Minister Abe and several Ministers have publicly expressed their support

Enthusiastic local support in the region site (Tohoku, Kitakami)

Japanese government is very serious about ILC though decision is complicated and needs international reassurance before Japan can officially bid to host the ILC

A lot of activity “behind-the-scenes”. S. Yamashita (ECFA-LC 2016) about Japanese cultural aspects:

- Silence is a virtue
- Decisions are normally taken unanimously which implies a huge effort and tremendous ground-work before the discussion



El Roto (El Pais 26-6-2016) (Spanish elections)

It was only after the lights of the election campaign were switched off when the people realized they could see but then it was too late