

# ILC v Japonsku a CLIC

Přehled situace koncem r. 2015

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4. SETKÁNÍ O HEP STRATEGII

VILA LANNA

16. PROSINCE 2015

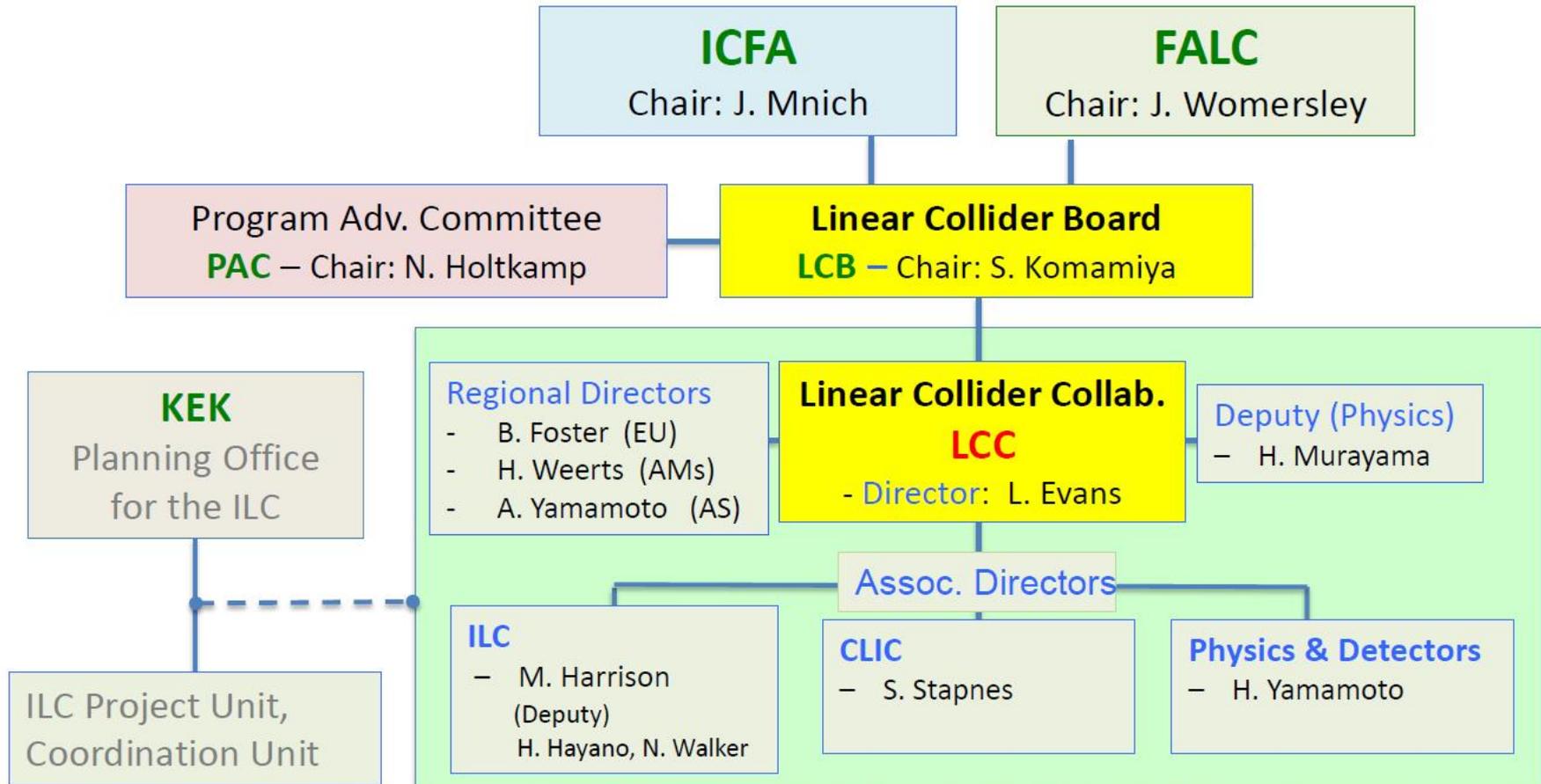
Poskládáno z prezentací LCWS2015 (S. Komamiya et al) se zaměřením na situaci kolem výstavby ILC v Japonsku.

Varování: nízký výskyt obrázků, vysoký výskyt zkratk

**Slovník** | **LCC/LCB** = Linear Collider Collaboration / Linear Collider Board  
**ICFA** = International Committee for Future Accelerators  
**FALC** = The Funding Agencies for Large Colliders  
**PAC** = Program Advisory Committee

**MEXT** = Ministry of Education, Culture, Sports, Science and Technology of Japan  
**the Diet of Japan** = dvou-komorový zákonodárný orgán, parlament a sněmovna  
**Federation of Diet members** to promote the realisation of ILC (since 2006)

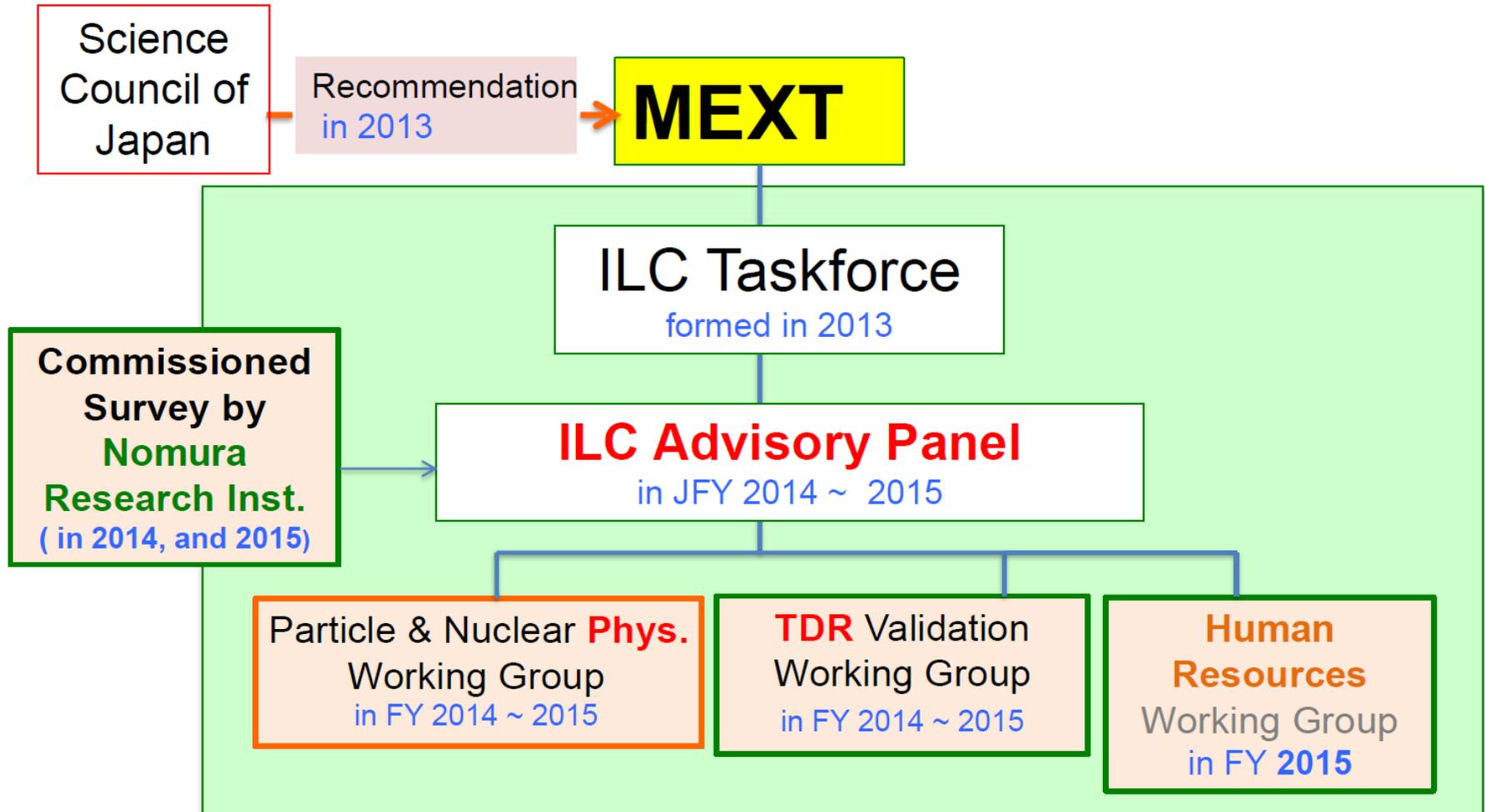
# LCB/LCC INTERNATIONAL ORGANIZATION AFTER TDR



# AKTIVITY V ROCE 2015

- February ICFA/LCB Meeting at J-Lab
  - April The first PAC meeting was held at LAL Orsay
  - April ALCWS15 at KEK and ILC “Tokyo statement” was issued at “ILC Tokyo Event”
  - May FALC Meeting at CERN
  - August MEXT opened to the public “Interim Report” and its English translation of the ILC Advisory Panel
  - August ICFA at Lepton Photon Symposium in Ljubljana
  - September CERN SPC working group of Energy Frontier
  - **November LCWS15 and FALC meeting at Whistler**
  - December ICFA Letter to ILC Advisory Panel of the MEXT
- Diplomatic activities are not in this list

## ILC being studied officially by the MEXT Japan



# SUMMARY OF THE ILC ADVISORY PANEL'S DISCUSSIONS

“Interim Summary”

## RECOMMENDATION 1

The ILC project requires huge investment that is so huge that a single country cannot cover, thus it is indispensable to share the cost internationally. From the viewpoint that the huge investments in new science projects must be weighted based upon the scientific merit of the project, **a clear vision on the discovery potential of new particles as well as that of precision measurements of the Higgs boson and the top quark has to be shown** so as to bring about novel development that goes beyond the Standard Model of the particle physics.

## ANSWER

**Discovery is not guaranteed at any frontier machines, but clear vision of discovery potential have been already demonstrated for ILC.**

# SUMMARY OF THE ILC ADVISORY PANEL'S DISCUSSIONS

“Interim Summary”

## RECOMMENDATION 2

Since the specifications of the performance and the scientific achievements of the ILC are considered to be designed based on the results of LHC experiments, which are planned to be executed through the end of 2017, **it is necessary to closely monitor, analyze and examine the development of LHC experiments.** Furthermore, it is necessary to clarify how to solve technical issues and how to mitigate cost risk associated with the project.

## ANSWER

**Surely we will monitor LHC physics.**

**MEXT is contacting governments during the LHC 13 TeV Run.**

**Recent “ILC Progress Report” by LCC answers most of the technical items.**

# SUMMARY OF THE ILC ADVISORY PANEL'S DISCUSSIONS

“Interim Summary”

## RECOMMENDATION 3

While presenting the total project plan, including not only the plan for the accelerator and related facilities but also the plan for other infrastructure as well as efforts pointed out in Recommendations 1 & 2, **it is important to have general understanding on the project by the public and science communities.**

## ANSWER

Public relation will be reinforced by international team and by KEK and the Industry Supporters (AAA).

Discussions with scientists of the other fields have been undertaken by KEK DG.

ICFA/LCB are preparing a document to clarify the issues in the report of the ILC Advisory Panel by the end of this year.

# NECESSARY STEPS TOWARDS THE APPROVAL

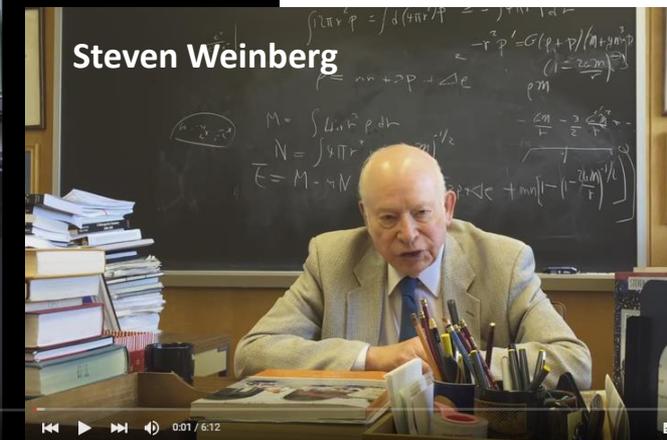
1. Technology Choice (2003)
2. R&D and design of the machine/detectors by the international team ⇒ Technical Design Report TDR (2013)
3. Official investigation and reviews of the ILC project by MEXT (**now**)
4. Clarify the scientific and technical issues in the report of the ILC Advisory Panel (**now**)
5. To facilitate / prepare intergovernmental discussions for sharing of cost human resources and the schedule **without commitment (starting)**.
6. MEXT green signal
7. Endorsement of CSTP (Council of Science, Technology and Innovation; chair: Prime Minister )
- 8. Cabinet decision**
9. International agreement **with commitment** ⇒ Establishment of ILC Lab

# REQUESTS FROM JAPANESE SIDE

- **It is important to confirm the willingness of each participating country to cover a reasonable part of the project cost.**
- The European and American particle physics community expects Japan to proceed with the ILC project in line with their strategies. **However, current plans and budget of their countries do not explicitly define the ILC project. It is necessary to proceed based on worldwide attitudes to the ILC project.**
- Physics communities are requested to talk with their governments to express their strong wishes for ILC, and submit official proposals to the governments requesting review processes.

# AUDIO-VIZUÁLNÍ PODPORA ILC

- Explain the importance of ILC to your funding agencies.
- Video campaign, short statements on why the ILC is important. About 600 already collected including 5 Nobels (#mylinearcollider)



# CO DÁL

- Do doby než padne rozhodnutí Japonska o výstavbě ILC se nedá očekávat navýšení budgetů pro LC
  - Pravděpodobně se bude jednat až o rok 2017
  - Objev na LHC nebo úspěšná mezinárodní vyjednávání mohou situaci posunout
- CLIC a FCC mají nyní sloučené financování a jsou hlavními variantami pro post-LHC HEP projekt v CERNu.
- Současná plánovací strategie CERNu předpokládá studii o dalším projektu až po roce 2019
  - CTF3 facility pouze do konce roku 2016, zatím chybí strategie pro 2017+
  - Významný pokrok v X-band technologii urychlovacích struktur
- R&D pro ILC i CLC je buď téměř ukončeno nebo brzy bude.

Výsledky nebo absence objevů LHC budou hrát klíčovou roli pro LC.

Kdy? Do roku 2035 má LHC physics program.

# BACKUPS

# EXPECTED TIMELINE FOR THE ILC PROJECT

## Years

- 2** Preparation period, Continuation of high-tech R&D (**now**)
- 4** Preparation for the ILC construction (with real budget)
- 9** Construction
  - 6<sup>th</sup> year - Start Installation
  - 7<sup>th</sup> year- Start of step-by-step accelerator test
- 1** Beam Commissioning
- ~8** Physics Run (500 GeV, 350 GeV, 250 GeV)
- ~** Run with Luminosity upgrade (500 GeV, 250 GeV)
- TBD** Energy upgrade (~ 1TeV)

# LOKALITA KITAKAMI I



# LETTER FROM ICFA TO THE ILC ADVISORY PANEL OF MEXT

- Since the “Interim Summary” was translated in English for the international community, and there are so many open issues raised in this Summary, ICFA decided to write a letter to the Panel.
- The Panel opened the Summary of their discussions but they did not ask anything to the international community, the purpose of the ICFA letter is just to clarify and to explain the issues raised in the Summary. KEK and Japanese ILC community is preparing the draft in cooperation with LCC and LCB.

- R&D samozřejmě pokračuje dál, např CLIC dosáhl urychlovacího gradientu přes  $120 \text{ MVm}^{-1}$ 
  - XBOX-3A
  - 3D tištěné waveguides z titanu
  - @400 Hz



**Xbox-3A: OPERATIONAL**

**Xbox-3B/C/D: COMMISSIONING**

**4x Toshiba 6MW 5us klystron**  
**4x Scandinova Modulators**  
**Rep Rate 400Hz**

**LLRF, pulse compressors and  
waveguide network to be  
completed at the end 2015**

*Medium power test:*  
3D printed Ti waveguide  
(Xbox-3A)

# SUMMARY OF THE ILC ADVISORY PANEL'S DISCUSSIONS

## (1) Science Merit of the ILC Project

The ILC is considered to be important because of its capability to investigate new physics beyond the Standard Model by exploring new particles and precisely measuring the Higgs boson and top quark. It should be also noted that the ILC might be able to discover a new particles which are difficult to be detected in LHC experiments...

ILC experiments are able to search for new particles, different from the ones that LHC experiments have been searching for. In case these new particles are supersymmetric particles, ILC and LHC experiments can study them complementally. On the other hand ILC experiments can carry out more precise measurement of the Higgs boson and the top quark, which are beyond the reach of LHC experiments...