EPSSU
Toward CCL contribution to French Input

Brainstorming Meeting 26/7/24

Recap LCWS

- Very well organised and good turn up
  - 340 registered participants out of which 251 on site
    - (compare FCC week 450/350)
  - Angeles, Akira, R.P., Paul, Maxime and Enrico
  - on-site
  - and Francois, Dirk, Ziad and ??? on-line
    - Does anybody know Gaelle Sadowski (IPHC)?

- Excellent dicussions
  - Recap of interest of higher energies > 500 GeV
    - See e.g. talk by Weiglein
    - Will be elaborated further until EPSSU
    - Will yield animated discussions in France
  - Industrial session with emphasis on sustainability
    - Lead by Maxim
  - Important outcome : Launching of LCVision project (see next slides)
    - N.B. : Tatsuya reported on LCVision at recent
    - ICFA Meeting (feedback?)
  - Further impressions : Paul, Maxim, online participants ?

What's happening elsewhere – Japan I

Talk by T. Nakaya

Summary

with my personal view

- The **Higgs Factory (HF)** is the NEXT HEP project with global consensus.
  - There are three proposals: the CEPC, the FCCee, and the ILC.
    - Upgrade possibilities, energy extendability and an option to switch to a hadron collider, will be considered.
  - As the HF is a long-term project, it is vital to keep ongoing projects with high physics outputs and steady R&D for future HEP technologies.

- In Japan, **ILC-Japan** is the core of the ILC activities. The Japanese HEP community would like to play a leading role in making the ILC a reality.
  - The ILC should be further promoted as a global project by strengthening the international collaboration with IDT and ICFA.
  - We are making every possible efforts for the Japanese government to consider expressing their interest in hosting the ILC.

- In the International framework, **ILC-Technology Network (ITN)** is established by networking with a number of foreign laboratories and institutes to strengthen the international cooperation in the ILC accelerator R&D.

- The Japanese HEP community has set up **the New Future Projects Committee** to update the strategy for future projects in Japan. Your input is essential for HEP projects in Japan, along with close communication with the global HEP community.

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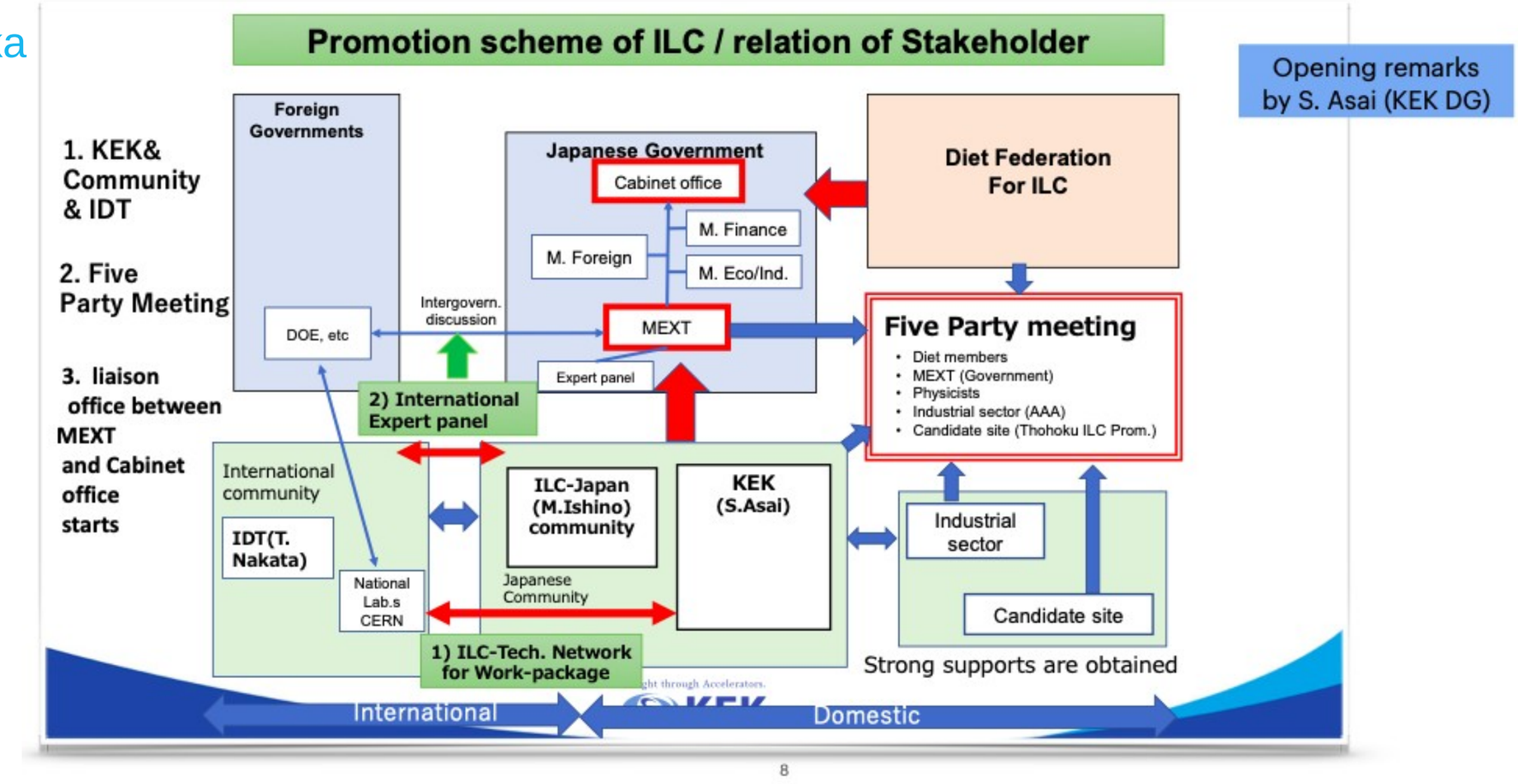
What's happening elsewhere – Japan II

Talk by T. Nakaya



- For Japanese authorities the organisation of the ILC as a global project is of crucial importance
- This unsolved question is one of the important reasons why the project is stucked!

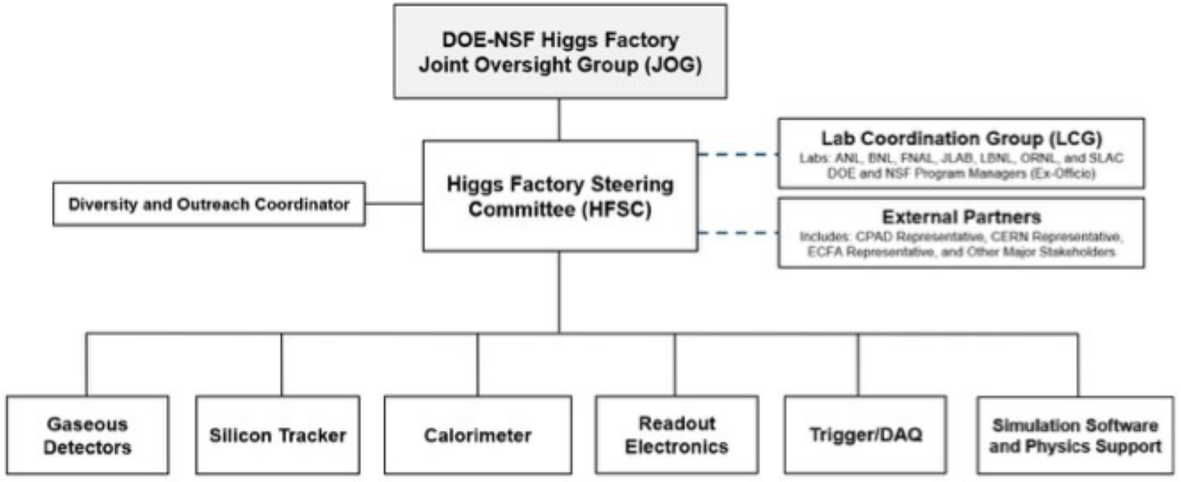
What's happening elsewhere – US I

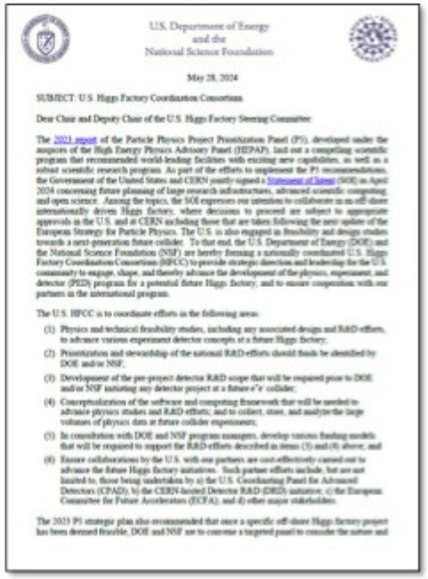
A. Patwa, DOE

U.S. Organization for Higgs Factory Coordination and Development – PED (I)

U.S. DEPARTMENT OF ENERGY | Office of Science

- Jointly, DOE and NSF recently issued a charge forming a *nationally coordinated* U.S. Higgs Factory Coordination Consortium (HFCC) to coordinate and develop the physics, experiments, and detectors (PED) program
  - U.S. HFCC includes: 1) Higgs Factory Steering Committee (HFSC); 2) a Lab Coordination Group (LCG); and 3) various detector systems that naturally map onto the CERN Detector R&D (DRD) initiative





U.S. Department of Energy and the National Science Foundation

May 28, 2024

SUBJECT: U.S. Higgs Factory Coordination Consortium

Dear Chair and Deputy Chair of the U.S. Higgs Factory Steering Committee:

The 2023 report of the Particle Physics Project Prioritization Panel (P5), developed under the auspices of the High Energy Physics Advisory Panel (HEPAP), laid out a compelling scientific program that recommended world-leading facilities with exciting new capabilities, as well as a robust scientific research program. As part of the efforts to implement the P5 recommendations, the Government of the United States and CERN jointly signed a Statement of Intent (SOI) on April 2024 concerning future planning of large research infrastructures, advanced scientific computing and open science. Among the topics, the SOI expresses our intentions to collaborate in an off-shore internationally driven Higgs factory, where decisions to proceed are subject to appropriate approvals in the U.S. and at CERN including those that are taken following the next update of the European Strategy for Particle Physics. The U.S. is also engaged in feasibility and design studies towards a next-generation future collider. To that end, the U.S. Department of Energy (DOE) and the National Science Foundation (NSF) are hereby forming a nationally coordinated U.S. Higgs Factory Coordination Consortium (HFCC) to provide strategic direction and leadership for the U.S. community to engage, shape, and thereby advance the development of the physics, experiment, and detector (PED) program for a potential future Higgs factory, and to ensure cooperation with our partners in the international program.

The U.S. HFCC is to coordinate efforts in the following areas:

(1) Physics and technical feasibility studies, including any associated design and R&D efforts, to advance various experiment detector concepts at a future Higgs factory;

(2) Prioritization and stewardship of the national R&D efforts should funds be identified by DOE and/or NSF;

(3) Development of the pre-project detector R&D scope that will be required prior to DOE and/or NSF initiating any detector project at a future e+e- collider;

(4) Conceptualization of the software and computing framework that will be needed to advance physics studies and R&D efforts; and to collect, store, and analyze the large volumes of physics data at future collider experiments;

(5) In consultation with DOE and NSF program managers, develop various funding models that will be required to support the R&D efforts described in items (3) and (4) above; and

(6) Ensure collaborations by the U.S. with our partners are cost-effectively carried out to advance the future Higgs factory initiatives. Such partner efforts include, but are not limited to, those being undertaken by a) the U.S. Coordinating Panel for Advanced Detectors (CPAD); b) the CERN-hosted Detector R&D (DRD) initiative; c) the European Committee for Future Accelerators (ECFA); and d) other major stakeholders.

The 2023 P5 strategic plan also recommended that once a specific off-shore Higgs factory project has been deemed feasible, DOE and NSF are to convene a targeted panel to consider the nature and

Hopefully organisation will be followed by funding

What's happening elsewhere – US II

A. Patwa, DOE

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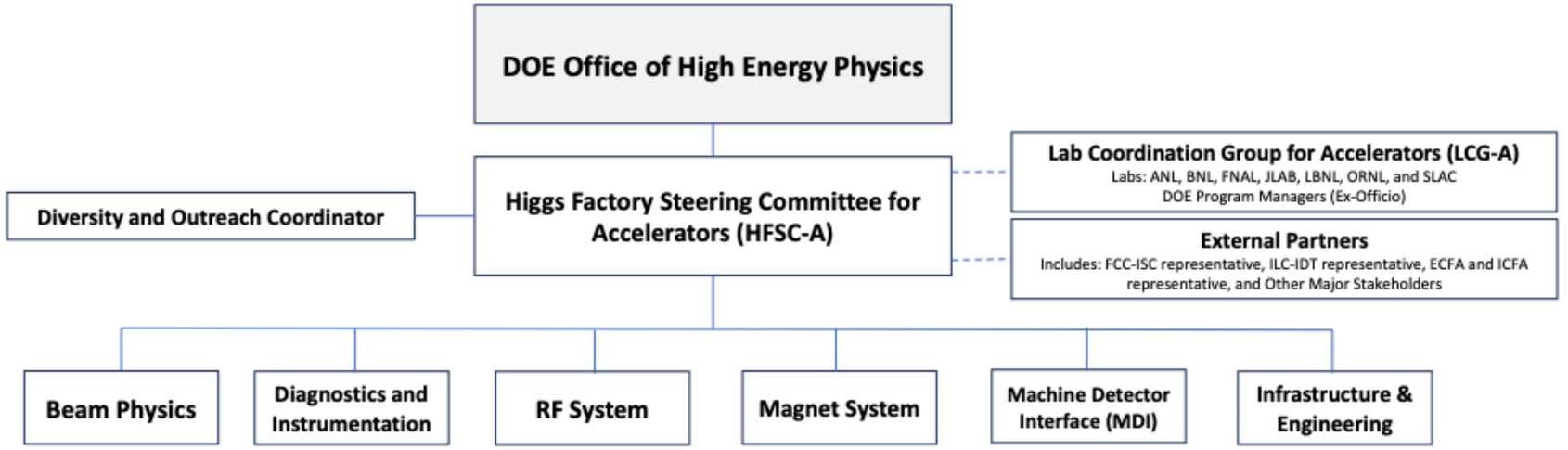
U.S. Organization for Higgs Factory Coordination and Development – Accelerators

U.S. DEPARTMENT OF ENERGY | Office of Science

- DOE plans to issue a charge later this month [July] that forms a *nationally coordinated* U.S. Higgs Factory Coordination Consortium (HFCC) for developing the accelerators program
  - In general, similar structure as the U.S. HFCC for PED; includes appropriate partners and accelerator systems
  - Membership in the Higgs Factory Steering Committee for Accelerators (HFSC-A) is being finalized now, and leaders are to be identified soon.



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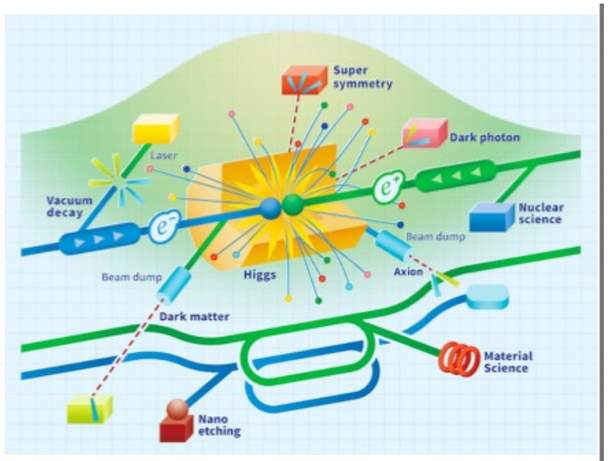
- N.B.: US remains “observer” in IDT-ITN, i.e. no dedicated investments at the moment
- Although it's importance might be overrated we cannon ignore the recent DOE-CERN statement

Outlook

- discussions towards a joint global LC vision just started
- will continue and intensify
- prepare strong contributions to the EPPSU, complementing individual project / detector concept submissions
  - **"Joint LC Vision Document (arXiv)"** (main ed. R.Pöschl) covering
    - physics at a LC from 90 GeV to multi-TeV (use references to existing documents, but highlight specifically
      - need for >= 500 GeV and polarised beams
      - new results since Snowmass
    - a joint strategic vision for a Linear Collider Facility incl. upgrades, beyondcollider etc — at any location in the world
  - **"Joint LC Vision EPPSU submission"** (main ed. M.Peskin) -> executive summary
  - **"LCF@CERN submission"**
- **mailing lists, inner organisation of LC vision to be improved**



- Goal is to federate the LC Community behind one LC project
  - Baseline and upgrades with advanced technologies
- If well done there is a chance to change the landscape (see charge of EPSSU)
  - Need to find the right balance between realism/credibility and creativity
  - i.e. can not present a wild set of options

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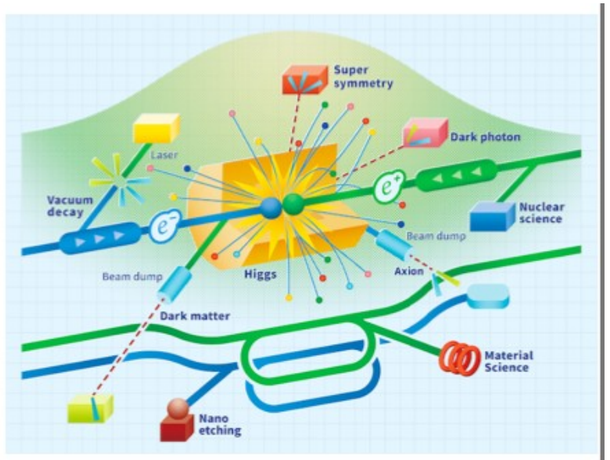

Key part !

- Goal is to federate the LC Community behind one LC project
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LCVision - Actions

- About to form expert teams with initial focus on «key part » that mainly concerns accelerators
- Team will be international but given my rôle and the short time available I will need help from a strong local (i.e. IN2P3/Irfu) team
  –
- Have to kick-off all this until my vacation at the end of next week
- About to create a skeleton for the document
- About to define the basic assumptions to start out from
  – ILC starting point with 20km or 30km tunnel ?
  – 2 interaction points should become baseline
  – 2nd branch may start out from CLIC380
- Completion of teams (also detector and physics) and first meetings immediately after summer break
  – Physics will profit from Snowmass report
  – Detectors will profit from launching of DRD activities

EPSSU – French Input

Extraire du circulaire de Laurent Vacavant et Nathalie Besson

Organisation pour la préparation de la contribution française :

Dans ce cadre et en sus de toutes les éventuelles contributions personnelles ou de groupes, l'IN2 et l'Irfu proposent que la communauté française produise et soumette un document synthétisant avis. Des groupes de travail autour de 4 thématiques scientifiques ont été mis en place pour colle et synthétiser les contributions de la communauté. Ils s'appuieront sur les GDR existants afin bénéficier des réseaux déjà constitués, mais ne sont évidemment pas restreints aux GDR :

- GT1 : Modèle standard et au-delà [en lien avec l'IRN Terascale] – Pilotage : Fabrice Coud Marie-Hélène Genest, Ana Teixeira
- GT2 : Physique de la saveur et tests des interactions fondamentales [en lien avec le G Intensity Frontier] – Pilotage : Yasmine Ahmis, Giulio Dujany, Christopher Smith
- GT3 : Neutrinos (notamment Long-baseline) [en lien avec l'IRN Neutrinos] – Pilotage : S Bolognesi, Stéphane Lavignac, Anselmo Meregaglia
- GT4 : QCD et collisions d'ions lourds [en lien avec le GDR QCD] – Pilotage : Cyr Marquet, Carlos Munoz Camacho, Michael Winn

À ces quatre groupes thématiques est adjoint un groupe transverse pour l'étude des différents scénarios de futurs collisionneurs (GTS). Ce groupe sera en charge de répondre spécifiquement au premier point du mandat de la stratégie, rappelé ci-dessus (en italique). Il devra naturellement interagir fortement avec les groupes thématiques, selon des modalités qu'il définira. Le groupe sera piloté par Cristinel Diaconu ainsi que Jeremy Andrea, Maarten Boonekamp et Stéphane Monteil.

Contributions de la communauté attendues en amont :

Chaque groupe sera responsable de l'organisation du travail dans son périmètre. Les travaux de collecte des contributions préparatoires émanant de la communauté, consultation large puis synthèse dans chacun des groupes devront converger d'ici à janvier 2025, pour être présentés et discutés lors d'un symposium ouvert à tous (vraisemblablement pendant la semaine du 20 janvier).

Sur le fond, il s'agit d'une mise à jour de la stratégie européenne établie en 2020. Dans ce cadre, les contributions peuvent s'appuyer (sans les reprendre in extenso) sur les différents travaux de prospectives conduits à l'époque et depuis (prospectives nationales, plan stratégique de l'IN2P3, structuration des R&D détecteurs ECFA/CERN, étude de faisabilité FCC,…). Les avancées scientifiques ainsi que les évolutions du paysage international auront donc une place prépondérante. Les contributions peuvent être de différentes natures : expérimentales, théoriques et phénoménologiques, technologiques (accélérateurs, détecteurs, calcul, …), sociétales ou appliquées.

Les contributions attendues doivent être synthétiques (2 pages maximum) et peuvent provenir des projets, des laboratoires, de collectifs variés ou d'individus. Afin d'aider les groupes de travail à collecter les contributions de la communauté française, un formulaire web sera ouvert dans les prochains jours au CCIN2P3 : https://survey.in2p3.fr/ESPPU
Chaque contribution sera adressée prioritairement à un seul des 5 groupes de travail (GT1 à GT4, GTS), un groupe de travail secondaire pouvant être indiqué lors de la soumission, ainsi que des grandes catégories et mots-clés précisant la nature de la contribution.

Nathalie Besson
Laurent Vacavant

Schedule GT01:
- Informal meeting ~4 October
- Deadline for 2-page input : 25th of October
- Terascale Meeting 13-15th of November
- French Meeting to prepare French contribution ~20th of January 2025

EPSSU – French Input on LC

- Reanimation of Comite Comite Collisionneur Lineaire (CCL)

- First Meeting today
  - First « classic members » + Irfu but should enlarge the circle
  - As far as I see e.g. LPNHE, IPHC, LPC, LPSC, DMLAB and LAPP are missing
  - Should contact asap possible new CCL Members

- Goals
  - First discussion on input document
    - May like to keep it in-phase with the LCVision document reminding how France could contribute
  - How to ensure a slot e.g. at the GT01 meeting in November?
  - How to (re)gather a community in France ?
  - How to get in touch with the « FCC mouvement » in France ?

- I think we have to draw tighter links between detector and accelerator communities than it was the case before

IDT-WG3 Steering Group

- Link to IDT-WG3
- Recently Claude Vallee stepped back from the Steering Group due to his retirement
- We are invited to propose a “French replacement”
- Who could this be, proposals?