The Chicago LC Workshop

Jan 7, 2002

TOWARDS A MACHINE and INTERNATIONAL LC PLANNING

or

GETTING OUR ACT TOGETHER

We've got a long tough road ahead of us but that's what comes with frontier territory.

Things Have to Happen at Three Levels

- Executive (OMB, OSTP, Sec'y of En., NSF Dir……..)
- Legislative (Appropriation and Authorization Committees and congress persons from YOUR district too)
- Scientific community and the public – we need their support

Of course, we all need to be active in initiating and nurturing the needed actions at all three levels

AND

IT NEEDS TO BE COHERENT - WORLDWIDE

What Needs to be Done?

1. Devise an acceptable and accountable mechanism for US participation in a completely internationalized project
2. Make the LC case with the Administration, Congress, other Scientific Communities and the Public
3. Preferably in an international context, devise, set up and carry out, before end 2003 a la LRP, a decision mechanism* for the choice of technology on which to focus our efforts.
4. Support and coordinate the R/D required for the American share of the LC accelerator facility
5. Support and coordinate necessary detector R/D and US detector design activities
6. Draft a proposal for an international LC facility to be sited in the US, including a technology choice.
7. Oversight and support of the US share of LC creation and operation

Ways and Means? (*more than one way to skin a cat*)

- DoE/NSF Long Range Panel has called for a Steering Group (USSG) to coordinate at least part of these activities i.e. expected that various jobs done by various entities
- Maybe USSG could actually do some of these things, e.g. 1,2,3 and 6 - 6 being strongly supported by the National Labs and such collaborations as may be put together to deal with special tasks (below)
- Perhaps USSG could usefully play some coordinating role in 4&5 – but maybe there is a better alternative
- 7 will be governed by the relationships devised in 1

NSF and DoE could agree to manage the USSG directly or, perhaps less burdensome, assign the task to a sub-contractor

?? Subcontractor could be one of the Labs – potential conflicts of interest
?? Subcontractor could be a broadly representative consortium already involved in HEP such as URA (separate BOO takes care of perceived conflict. BOO with Agency guidance appoint USSG to carryout 1,2,3 and 6)
?? Agency oversight of subcontractor could be a Joint Task Force of DoE – NSF

Technical tasks, e.g. 4,5 = detector and facility R&D

?? Opportunity for university collaboration(s) such as the ones now involved in muon based neutrino factory R&D
- perhaps leadership/management could be shared among university groups on a rotating basis

- these collaborations might form core groups that participate in realization of the LC as subcontractors to the international entity and, in the case of NSF associated university groups be the core of an MRE proposal for NSF participation in the LC

?? Currently accelerator R&D is partially coordinated through the principal Lab performers so there is a place for interested university participants. Once the technology choice is made, more active coordination may be appropriate.

Internationalization – One possible view

Assumptions

?? Major collaborating countries will take significant share of "ownership" of LC and will have significant prerogatives in determining the technical design of the facility and the policies delimiting its operation.

?? Existing institutional structures will be the primary technical and manpower resources for design, construction and operation of the new facility

- maintains the needed physics diversity in the program
- carries the particle physics culture regionally

?? Determination and realization of the detector will be handled in a manner similar to previous ventures in international realization of accelerator facilities

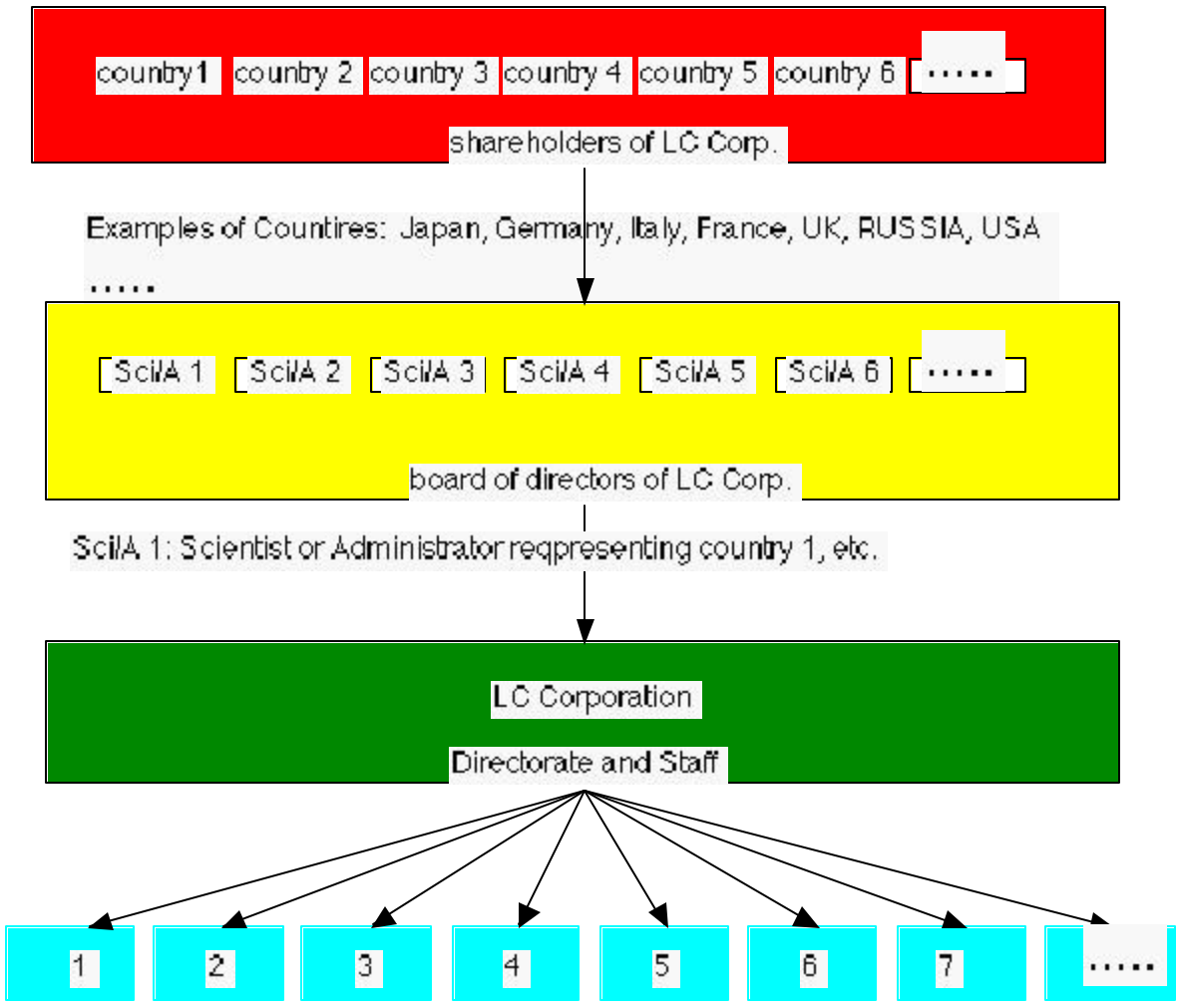
A Corporate Structure

- Consonant w. the assumptions one could constitute a *limited liability* corporation, major countries or their agents being shareholders w. votes proportional to share in supporting the facility realization and operation.
- Limited life, say 20 years, renewable by mutual consent
- Shareholders “elect” a Board of Directors with technical, scientific and policy oversight of the LC Corporation, each major shareholder will be represented by a Director. The “Directors” are distinguished scientists or administrators familiar with the conduct of elementary particle physics or of science policy. (see Fig)

- The Board appoints a Director General, DG of fixed term (5 years), perhaps once renewable. Integration of the design construction and operation, and administration of the common fund will be duties of the DG among other things.
- Majority of the work carried out by subcontractors constituted largely of units now participating in HEP, i.e. national labs and universities.

There are of course other models but this is one that seems to have the needed flexibility. In addition, the myriad details of how to solve the problems inherent in a large collaborative venture have been well worked out and demonstrated in the business world (e.g. 51% gets you the site choice…) which operates with such a system.

Diagramatic Display of Possible Corporate Organization for the LC



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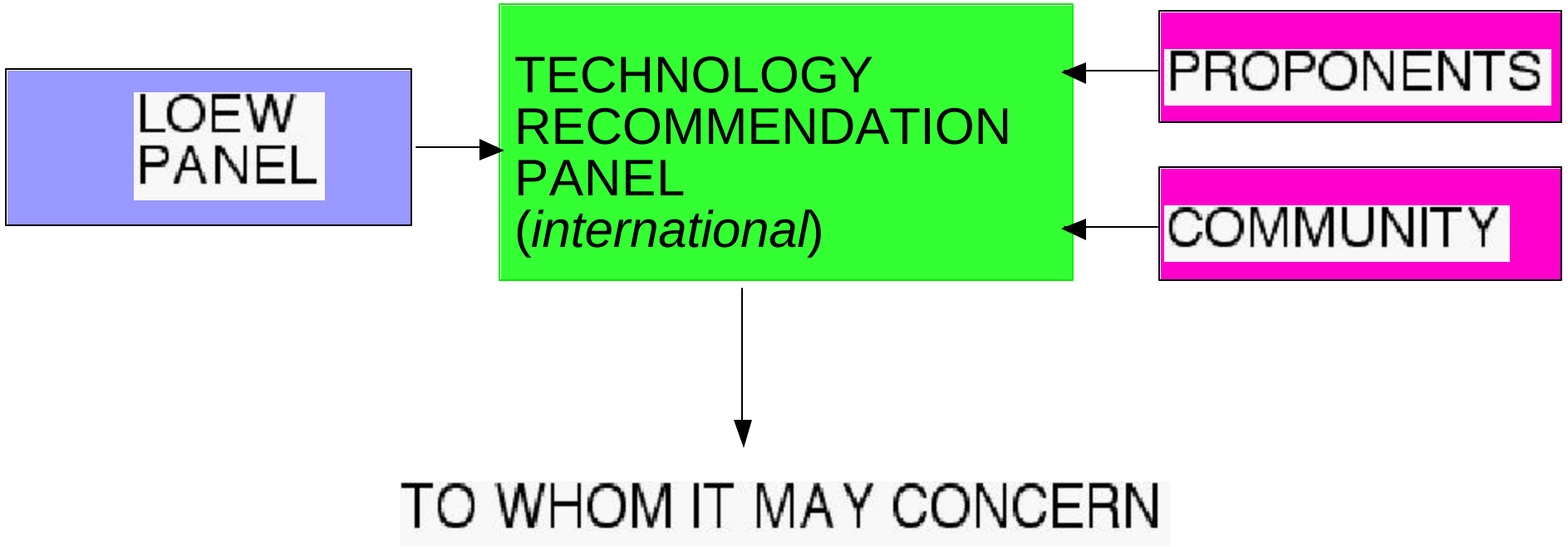
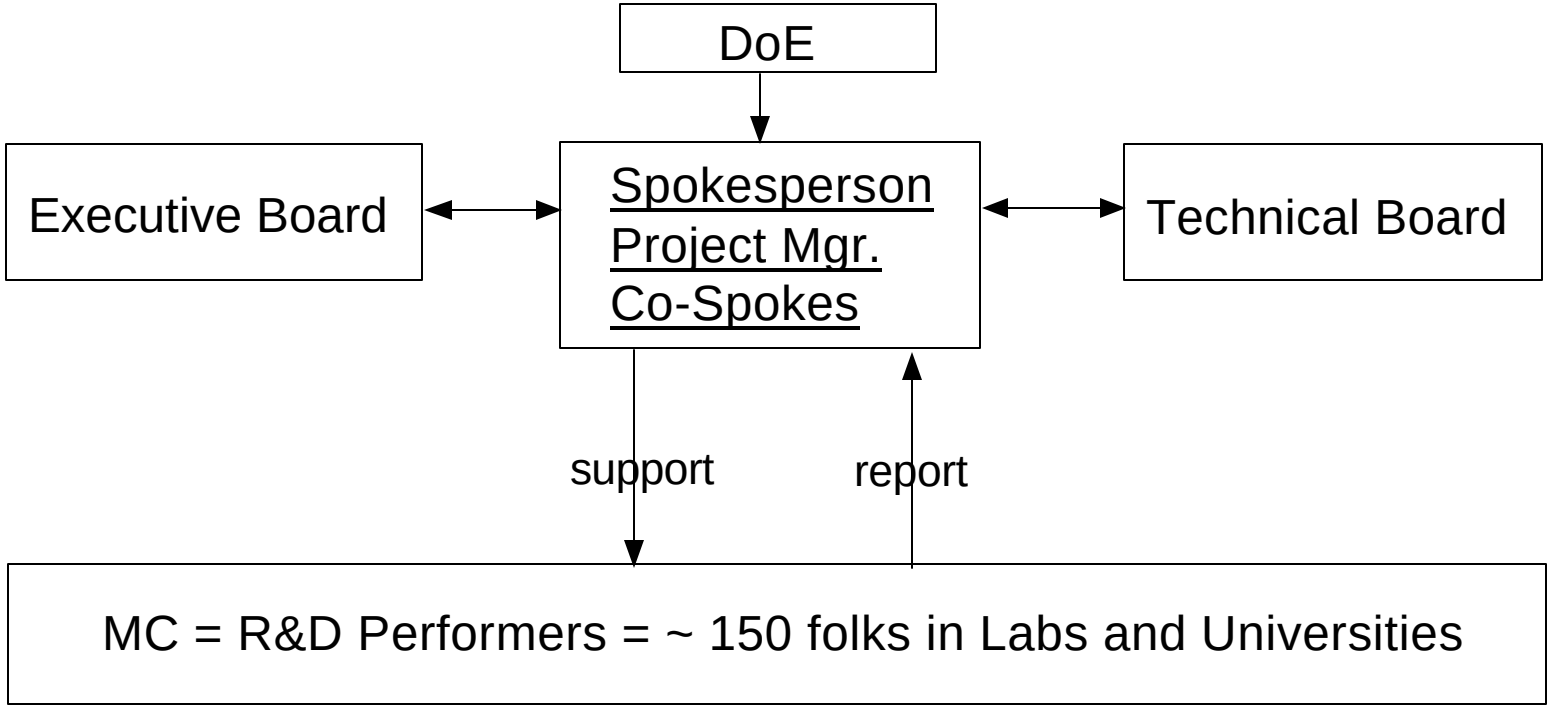


Possible model for LC technology selection

Following pages are examples of University based organizations now involved in the Muon Collaboration which may serve as input for organization of LC work

MC Organization (DoE side)

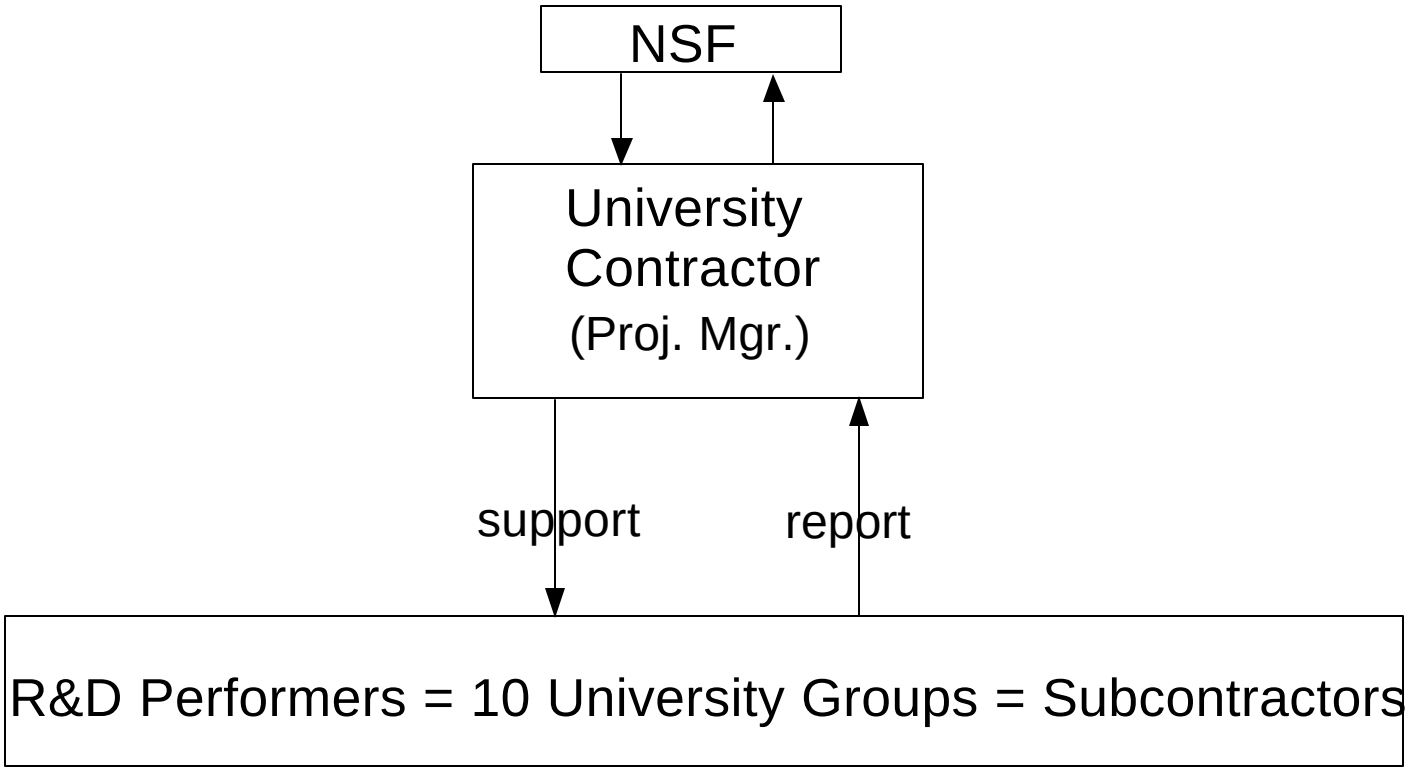


Exec and Tech Boards drawn from R&D performers

Spokesperson elected from among R&D performers

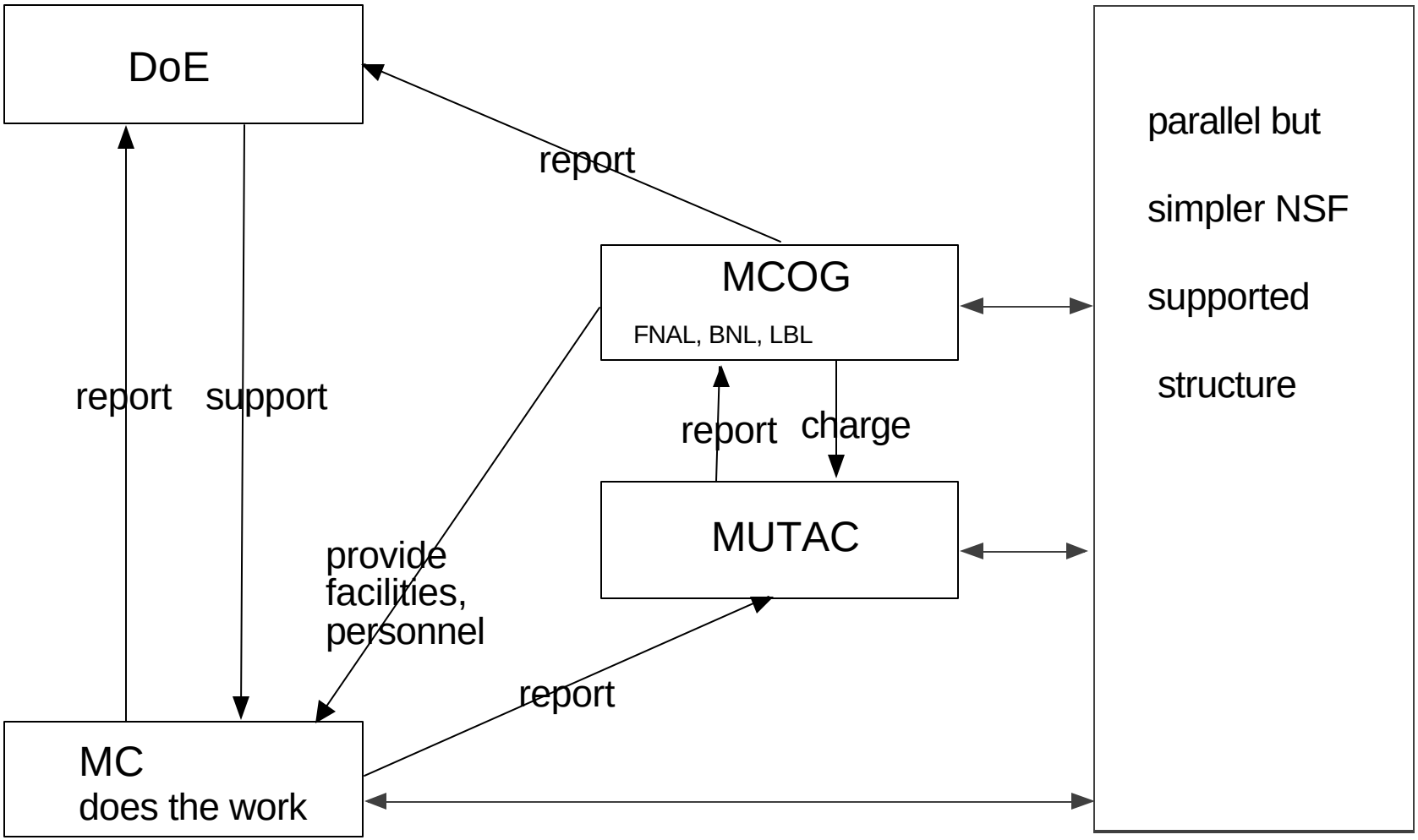
Project Manager appointed by Spokes w. advice and consent of DoE and Boards

MC Organization (NSF side)



Contractor and Subcontractors agree on program and subcontracts and

contractor makes proposal to NSF & administers finally agreed upon prograı



MC = Neutrino Factory and Muon Collider Collaboration

MUTAC = Muon Technical Advisory Committee

MCOG = MC Oversight Group (appÕtÕd by Lab DirÕs.)