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**ECFA** EUROPEAN COMMITTEE FOR FUTURE ACCELERATORS

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EUROPEAN LINEAR COLLIDER STEERING GROUP

REPORT OF THE SUB-GROUP  
ON ORGANISATIONAL MATTERS

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## **Executive Summary**

### **1) Recommendations**

This report is the result of the deliberations of a Sub-Group (SGOM) of the European Linear Collider Steering Group (ELCSG) set up by ECFA.

The recommendations contained in this report must be viewed in the context of the terms of reference we were given (see Appendix a), in particular the collision energy (0.5 – 1.0 TeV) and timescale (latest completion date of about 2014) of the project, and the European perspective.

The following are our main recommendations:

#### **Nature of the Organisation**

- a) The Linear Collider project should be an international legal entity established through intergovernmental agreement among the Member States as a time-limited “Project” (hereinafter called the Global Linear Collider Project or GLCP) located at or near an established laboratory (Host Laboratory). It should not be a new stand-alone laboratory.
- b) The GLCP should be fully international from the outset, with a well-defined relationship with the nearby Host Laboratory which should provide services and infrastructure.
- c) All personnel employed by the project, or seconded to it and originating from the GLCP Member States must have right of access and accompanying family members must be granted visas. For personnel employed by the project or on long-term secondment to the project, work permits from the Host State should be available to spouses/partners.

#### **GLCP Governance**

- d) Governance of the GLCP should be organized on a regional basis, namely three regions, “Americas”, “Asia”, and “Europe”, each with its own Regional Board.
- e) Member States should participate in the governance of the GLCP through their Regional Board.
- f) The GLCP should be governed by a Council composed initially of fifteen voting members, five appointed by each Regional Board.
- g) In addition to the voting members, the Council should have, in attendance, a representative from the Host State, the Project Leader and the chairs of its advisory committees.
- h) All votes within the GLCP Council should have the same weight but for some issues safeguards may need to be introduced.
- i) An appropriate structure should be devised for the GLCP giving the Project Leader the responsibility and resources to bring the project to a successful conclusion. This structure should include an oversight and monitoring system which will ensure that the status of the GLCP is transparent to the Member States at all times.
- j) The composition and voting procedures in each Regional Board are a matter for the states in that region.

## European Regional Board

- k) All “European” Member States should be represented on the “European” Regional Board, but voting on this Board should be by a form of qualified majority where each state’s vote is proportional to its fractional GDP (or its fractional contribution if the Board so decides).
- l) For “Europe” we consider there are two options:

Either:

- All CERN Member States participate in the GLCP as part of the basic programme of CERN, with association/cooperation agreements to allow non-CERN “European” states to participate. In this case the “European” Regional Board would be the CERN Council. This role for the CERN Council will require it to take a strategic overview of European particle physics and modify its working practices. We note that such a role is fully consistent with the mandate of CERN as given in the CERN Convention.

Or:

- “European” contributions are made outside the CERN programme. In this case consideration should still be given to using a super- or sub-set of the CERN Council reconstituted as the “European” Regional Board.

Each of these approaches has advantages and risks. We have not reached a conclusion on a choice, and we recommend wider consultation to explore them further.

## GLCP Contributions

- m) The fairest and most justified financial model would involve the Host State/Region paying a premium of about 25% of the construction cost (hereinafter referred to as the Host State Premium) and the balance being divided according to the GDP of the Member States including the Host State.
- n) The contributions of the Member States should be organised on a regional basis under control of the Regional Boards, which would monitor and adjust the contributions within the region as necessary. In-kind contributions should be by value according to a common costing model.
- o) The minimum contribution of each Member State should be proportional to its GDP. Contributions above the GDP share by interested states that wish to enhance the role of their institutes or industry should be encouraged. Such contributions could reduce the obligations of other Member States.
- p) Members should make cash and in-kind contributions. Members may choose to make their contribution wholly in cash.
- i. The majority of components should be provided as in-kind contributions valued according to a common costing model.
  - ii. These in-kind contributions cover the design, manufacture and long-term technical responsibility for major components of the project. Competent institutes (Lead

Laboratories) of the Member States should take the responsibility for these contributions. These institutes would be the key players in the realisation of the GLCP. This distribution of responsibility for major contributions is one of the basic concepts of the Global Accelerator Network (GAN).

- iii. A significant cash element will be required to allow the Project Leader the flexibility needed to bring the project to a successful and timely conclusion.

### **Next Steps**

- q) Interested states should agree to set up a pre-GLCP Council as soon as possible. This should be a temporary body.
- r) The choices of technology and site are on the critical path and must be made as soon as possible. In order to meet the timetable laid down in our terms of reference the technology choice must be made before the end of 2004.

## **2) CERN's interaction with the GLCP**

We have carefully considered the relationship between CERN and the GLCP and wish to make the following points:

- i. The CERN Laboratory is and should remain Europe's accelerator laboratory.
- ii. The CERN Laboratory should remain the hub of a European accelerator research network for future machines beyond the GLCP. This network consists of institutes in European nations with accelerator R&D expertise.
- iii. CERN's flagship facility the LHC will be operating in parallel with the Linear Collider (if it is constructed on the timetable envisaged) for a substantial period and the LHC must be fully supported, including possible upgrading.
- iv. The GLCP has to be seen as an integral part of the European particle physics programme. Given the likely cost of the GLCP and the high priority given to the completion of the LHC, it is clear that the total European Particle Physics budget must be maintained, in real terms. However, some additional resources will be required before the end of the decade if the completion date of about 2014 is to be met.
- v. The CERN Laboratory could become a Lead Laboratory for the GLCP.

## Chapter 1 Introduction and Background

- 1.1 The European Committee on Future Accelerators (ECFA) set up a European Linear Collider Steering Group (ELCSG) which in turn set up a Sub-Group on Organizational Matters (SGOM) in September 2002. This report is the result of the deliberations of this Sub-Group. (The ELCSG is the European counter-part of the International Collider Steering Committee set up by the International Committee for Future Accelerators (ICFA)).
- 1.2 Our terms of reference and membership are given in Appendices a) and b) and the meetings held and oral presentations received are listed in Appendix c) and Appendix d) is the letter sent to ECFA delegates requesting input to our deliberations.
- 1.3 Our deliberations have to be seen in the context of activity elsewhere in this same area by committees set up by the Asian Committee for Future Accelerators (ACFA) and the US High Energy Physics Advisory Panel (HEPAP), as well as earlier reports from the OECD Global Science Forum, High Energy Physics Consultative Group and the ICFA Task Force Report on Global Accelerator Networks (GAN). Reports from some of these bodies were available to us and are listed in Appendix e).
- 1.4 We have interpreted our task within our Terms of Reference as making recommendations on all aspects of setting up, organising and managing an International Linear Collider in any region of the world, but viewed from a European perspective. Given our later conclusion that it should be a time-limited project, we refer to it henceforth as the Global Linear Collider Project (GLCP).
- 1.5 On the question of timescale, it is clear to us that a completion date of about 2014, as stipulated in our terms of reference, is extremely challenging. This makes it very important to get the organizational, financial and political issues, as well as the technology and site choices, made in parallel and as rapidly as possible.
- 1.6 On the 2014 timescale, a site adjacent to CERN is, however, not credible. This should be reviewed if the timescale slips significantly.
- 1.7 We are very conscious of CERN's unique role in European and world particle physics. It is the premier accelerator laboratory in Europe and must be supported not only because of the LHC, but also as the "home" accelerator laboratory of most of the 20 CERN Member States, and as a possible site for accelerator projects beyond the GLCP.
- 1.8 Our general approach has been to make recommendations on the preferred choices rather than discussing all possibilities. This does not necessarily mean that other approaches could not be adopted.
- 1.9 We have not directly addressed the organization of the construction and operation of the detectors that have to be an integral part of the GLCP. Clearly the accelerator design must conform to the needs of the experiments, and therefore close liaison is required between the experiments and the machine designers.

- 1.10 Large global experimental collaborations exist at various laboratories around the world and can be used as models for the GLCP Experiment Collaborations. We have been conscious in our deliberations of the need for the GLCP organizational and management structure to take the needs of the user community into account.
- 1.11 We have examined the GAN proposal [see Appendix e), reports 4 and 7] that, during the operational phase of the Project, remote control-rooms in regions other than the Host Region might be used. We do not consider this to be crucial to the success of the project, since the long-term technical responsibility for major subsystems will in any case remain with the lead laboratories in all the regions. However, the possibility could be left open technically, should it be considered desirable by the partners subsequently.
- 1.12 Finally, following the terms of our mandate, we make no comment on the technical or scientific case for a 0.5 to 1 TeV linear collider; this has been done by others. But we reiterate that if there is to be a significant time overlap between this machine and the LHC then serious political and organisational issues must be settled very soon. As we have emphasised elsewhere in this report, these issues lie on the critical path to approval.

## Chapter 2 Aims and Functions of the GLCP

- 2.1 The objective of the Global Linear Collider Project (GLCP) is to construct and operate an  $e^+e^-$  collider of energy 0.5 – 1 TeV by and for the use of a world-wide consortium of interested states. The exploitation of this facility should be open to the members of the consortium and to the wider community according to the ICFA guidelines.
- 2.2 The GLCP's purpose is to provide the research tools and infrastructure needed to explore the scientific aims described in the document detailing the physics case\*.
- 2.3 Responsibility for the construction, maintenance and possible upgrading of the machine should be devolved as far as possible to major sub-contractors (laboratories and industry), but overall control of the project must remain with the central project leadership. This is a significant change from the way past accelerators have been constructed and maintained.
- 2.4 The aim is to have a lean central structure by maximising in-kind contributions from Member States and by sub-contracting services to the nearby host laboratory or others, including industry, where feasible and economically advantageous.
- 2.5 The Member States of the GLCP have a responsibility not only for the scientific and technological aspects of the machine, but also for the wider cultural significance of the endeavour. A funded outreach activity should be part of the mission of the project and extended to all the Member States. The fact that large parts of the machine will be the technical responsibility of national laboratories and institutes, should make this outreach task easier and create a sense of "ownership" of the project among the Member States.

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\* See Appendix e) reference 13

## **Chapter 3 Form of the GLCP**

### **3.1 The GLCP as a Fixed-term Project located near an existing Laboratory**

- 3.1.1 We propose that initially the GLCP should be established for twenty-five years, including construction time. This should enable the scientific objectives to be met and would limit the commitments of the participating governments. There should be a review of the lifetime of the GLCP after ten years of operation, with subsequent reviews every five years.
- 3.1.2 The GLCP should be sited near an existing “Host” laboratory, from which it should be managerially wholly independent. This would:
- a) save much of the cost of establishing the infrastructure, support, and services that are needed by any large-scale project, while keeping the number of staff directly employed by the GLCP low;
  - b) provide the necessary academic and technical ambience from the outset;
  - c) reduce the cost of ultimate closure of the GLCP by ensuring that facilities owned by it are kept to a minimum.

Relations between the GLCP and the Host Laboratory, and the role of the Host State, are considered in more detail in Chapter 5.

### **3.2 Membership and Contributions**

- 3.2.1 The world community of particle physicists has identified a linear collider as their highest priority future project. We therefore consider that countries with substantial communities of particle physicists that wish to use the facility should be expected to join the GLCP as Member States through accession to the establishing Convention and Protocols. For European countries this would be either directly or via CERN. Other countries with relatively small particle physics communities should also be welcome to participate via bilateral agreements with the GLCP.
- 3.2.2 Member States should be grouped into regional consortia or “boards”, and the Project regarded as a collaboration between three regions, “Europe”, “Asia”, and “the Americas”. Countries from regions other than these could participate through one of these consortia. This structure would have considerable advantages in terms of Governance (see Chapter 3.3 below) and would also simplify the determination of contributions. We note that the Atacama Large Millimeter Array (ALMA) has a European Regional Board on which all contributing states, including states that are not members of ESO, are represented.
- 3.2.3 As discussed in further detail in Chapter 4.2, we recommend that the cost and value of the construction and operational phases of the GLCP should be established using a centrally agreed cost model. The sharing of costs between the regions, once the Host State Premium has been subtracted, should be according to the total GDP of the states within each region. Although it will be

up to each Regional Board to decide how to apportion the cost between the states in its region, we recommend that the minimum contribution of each member should be proportional to its fraction of the total regional GDP. We expect that contributions will be mainly in-kind during the construction phase, but some significant fraction of each region's contribution will have to be in cash.

- 3.2.4 We expect and hope that states with a special interest in the GLCP and associated technologies will make additional contributions. These could be wholly in-kind.

### **3.3 Governance**

- 3.3.1 The proposed organisational structure is given in the chart in Figure 1. It is important to distinguish Governance (upper part of the chart), from management (lower part of the chart) and monitoring, which are discussed further in Chapters 6 & 7. The Project should be governed by a Council whose voting members are nominated by the Regional Boards. In addition to the voting members, the Council should have in attendance the Project Leader, a representative of the Host State and the chairs of the advisory committees.
- 3.3.2 We propose that Regional Boards should be established (through separate agreements, subsidiary to the convention or treaty establishing the GLCP) on which the participating countries in each region would be represented. We recognise that the issues to be addressed in each region may differ, and we suggest that the constitution of these Boards would be a matter for the countries involved in each region to decide. Issues related to particular countries, especially, as discussed above, the value of their contributions, should whenever possible be settled at regional level.
- 3.3.3 Each of the Regional Boards would be represented on the GLCP Council by five Delegates, or some similar number to be decided. The role we envisage for the Council is described in the specimen convention in Appendix f). We expect that the Council will meet between two and four times a year. At least one Council meeting per year should include a plenary session in which all Member States would be entitled to participate, although only the five delegates from each region would be entitled to vote.
- 3.3.4 It would be up to each region to select its delegation to the GLCP Council. We expect that on some issues (e.g. the budget), regions might wish to instruct their Delegates, but on others they would be free to vote (not necessarily in the same way) on the basis of their individual judgements in the light of the arguments.
- 3.3.5 We believe that this structure will allow the relatively small Council to remain focussed on the key business of the GLCP. An alternative structure in which each member is represented on the Council is possible. However, the large number of countries involved would make the Council very unwieldy, and their very different economic strengths and roles in the GLCP would probably require much more elaborate voting rules than those described in paragraph 3.3.6, below. We believe that the regional structure that we propose would both protect the legitimate interests of the major players and allow the voices of the smaller players to be heard.

- 3.3.6 Voting rules in the Council should be along the lines developed at other similar Organisations: all votes having the same weight with safeguards such as unanimity for some special issues, two thirds or simple majorities for others.

### 3.4 Possible Structure of the “European” Regional Board

- 3.4.1 We propose that all “European” Member States should be represented on the “European” Regional Board, but that voting should be by a form of qualified majority where each state’s vote is proportional to its fractional GDP ( or its fractional contribution if the Board so decides)

- 3.4.2 For the European Board itself, we have identified two possible options:

Option 1: All CERN Member States participate in the GLCP, wherever it is built, within the framework of CERN's basic programme. “European” states that are not members of CERN would need to conclude association/cooperation agreements with CERN in order to participate in this part of the basic programme. In this case the “European” Regional Board would therefore be the CERN Council. This role for the CERN Council will require it to take a strategic overview of European particle physics and modify its working practices. We note that such a role is fully consistent with the mandate of CERN as given in the CERN Convention.<sup>1</sup> When acting as the European Regional Board, the CERN Council should take decisions in a way that reflects the relative contributions of the Member States to the GLCP, which could include additional contributions.

Option 2: European contributions are made outside the CERN basic programme. In this case the “European” Regional Board will nevertheless have a large overlap in membership with the CERN Council, the national representatives to both bodies being nominated by Member States. This raises the possibility that a suitable sub- or super-set of the CERN Council, operating under specially agreed procedures specific to the needs of the GLCP, could be constituted as the “European” Regional Board for the GLCP.

- 3.4.3 Both these options would have the advantage that a single body with governmental representation would be able to maintain a strategic overview of European high energy physics. However, further and broader discussion is necessary before a choice can be made.<sup>2</sup>

- 3.4.4 Whatever CERN Council’s role is in the governance of the GLCP, the CERN Laboratory, like any other major laboratory, could play an important technical role in the Project.

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<sup>1</sup> The CERN convention gives CERN the general mandate to organise and coordinate collaboration among European States in the domain of Particle Physics. See Article II of the CERN Convention (ref. 11 of Appendix e). Furthermore, the participation by CERN in a multinational project is explicitly foreseen in Art VII(2) of the Convention.

<sup>2</sup> In our consultations with some of the European funding authorities we have found a marked divergence of views. Some authorities clearly wish Europe to be represented by the CERN Council, with European participation in the GLCP as part of the CERN programme, while others do not wish to make any use of CERN for this purpose.

### 3.5 Legal Framework

3.5.1 The legal framework of the GLCP should facilitate its independence from the individual Member States, and in particular should:

- allow the GLCP to receive and hold funds, enter into contracts and agreements, and employ personnel;
- provide the GLCP with exemption from customs duties and VAT on equipment procured in the Host and Member States, given that construction of major components will be carried out in the Member States;
- ensure that the Host State or other Member States should not benefit unduly from the taxation of salaries paid by the Project to its employees. If such taxes are raised, they should benefit the Project;
- ensure that staff working on the GLCP can enter the Host and Member States without restriction in order to participate in the construction and operation of the linear collider. This should also apply to representatives of the Member States participating in the meetings of the Council and subordinate bodies;
- allow partners and spouses of staff and personnel on long-term secondment to obtain work permits in the Host State and, if possible, in the Member States;
- protect intellectual property rights, while ensuring that all intellectual property produced by the Project can be used free of charge by any Member State for non-commercial purposes.

3.5.2 We have studied in some detail a number of existing international scientific projects and consider that the legal framework described in 3.5.1 above could be provided by one of the following three models:

1. An inter-agency agreement as for GEMINI and large particle physics detectors, supplemented by an agreement with the Host State.
2. A national company established by an intergovernmental agreement and governed by the national laws of the Host State (as at ESRF, ILL), backed up by bilateral arrangements with the Host State or other Member States covering the fiscal status of the company and access for personnel.
3. An independent, international project/organisation established by an intergovernmental convention or treaty and backed up by the appropriate protocols and agreements with the Host State and other Member States (as at CERN, ESO, ESA, JET, EMBL, ALMA, and as proposed for ITER).

3.5.3 Negotiations over ITER, the international fusion project being planned by the European Commission (Euratom), Canada, China, Russia, Japan and the USA, are at an advanced stage and we have benefited from work done by the ITER team. The regional representation and structure we are proposing is similar to that implemented by ALMA.

### **3.6 Discussion of the preferred model**

- 3.6.1 We do not consider that the financial stability required to ensure the success of the GLCP could be provided by an inter-agency agreement.
- 3.6.2 It might be possible to create the GLCP as a national company with special conditions granted by the Host and Member States (exemption from taxes on contributions, reimbursement of VAT and import duties, unrestricted access for personnel, etc.) as at the European Synchrotron Radiation Facility. However, this may require exceptions or changes in the national legislation of Member States and could thus prove difficult to implement. Furthermore, we see no particular advantage in following this route, as submission to national law might prove a hindrance rather than a help. Nonetheless, a suitably constituted and protected national company could, in the final analysis, be an acceptable option in the event of political or other obstacles to the creation of an intergovernmental organisation.
- 3.6.3 Our preference, therefore, is to create the GLCP as a new intergovernmental organisation, as this would provide a suitable and stable legal framework. We note that this is the option preferred by the Japanese Organisational Working Group for the JLC, in the event that the linear collider is built in Japan. On ITER, we note also that the participating regions are currently negotiating to establish a new treaty-based intergovernmental organisation. We therefore believe there are no formal barriers to following this route, and suggest that work might be saved by using the ITER intergovernmental agreement as a starting point for the convention or treaty that will establish the GLCP. A specimen convention is supplied in Appendix f).
- 3.6.4 If the GLCP were to be sited in a CERN Member State, it would be possible to use CERN as an umbrella organisation for executing the project. The advantage would be that the CERN Convention already exists and provides a legal framework, which could speed up the implementation, and provide the advantages of a intergovernmental organisation. Non-European Members of the GLCP would need to sign bilateral agreements with CERN. It should be possible to ensure that in practice the different regions participated on identical terms, although the formal asymmetry between CERN Member States and non-Member States might be considered a drawback. However, we do not recommend this route unless it proves difficult to establish the GLCP as a new intergovernmental organisation.

## **Chapter 4 Financial Basis**

### **4.1 Introduction**

- 4.1.1 A secure financial base for the GLCP is clearly essential for its success. However, providing this for a global project will be challenging.
- 4.1.2 In this chapter we make proposals for how this might be achieved. We realise that they may not be ideal for all potential Member States, but hope that they are sufficiently flexible to be acceptable.
- 4.1.3 The general philosophy is that the Host State/Region should make a significant contribution, of the order of 25% of the cost, and the remaining 75% should be divided up amongst the Member States, including the Host State.
- 4.1.4 In order to keep the truly “global” aspect of this project we start from the premise that each partner should contribute at least according to their “wealth” i.e according to their GDP.
- 4.1.5 Unlike any previous major accelerator project, we propose that sub-systems of the accelerator should be “contracted out” to major particle physics laboratories acting as lead laboratories for in-kind delivery: an aspect proposed by the Global Accelerator Network (GAN) concept.
- 4.1.6 The in-kind contributions from Member States should be maximised. However, some fraction of each partner’s contribution will have to be in cash in order to provide the central services, Central Team (see 6.5.1), central contingency and central reserve (see 4.2.2).

### **4.2 Costing**

- 4.2.1 A complete costing of the project must be done centrally according to procedures agreed by the three Regional Boards based on the Work Breakdown Structure (WBS) methodology. This costing will then serve as the basis for allocating the value of work packages that are contracted out to lead laboratories. It is also this value that will be “credited” to a lead laboratory, not the actual cost, if different. Any sub-division beyond a lead laboratory and sub-contracting to institutes in other states should also be based on this central costing.
- 4.2.2 The total cost must include the cost of the Central Team, central services and central contingency as well as the central reserve. This reserve is to cover unforeseen items and services not included in the initial set of work packages. Unlike the contingencies on the central work packages and services, which are under the direct control of the Project Directorate (see 6.4), all requests against this special reserve must be authorised by the Council on the request of the Project Leader.
- 4.2.3 As noted in 4.1.6, a significant fraction of the contributions will need to be made in cash to the central project. It is important that this fraction should be defined as soon as possible and should be divided up among the Member States.

- 4.2.4 The cost of the operational phase of the GLCP needs to be established at an early stage, including the cost of eventual de-commissioning, since members need to know their long-term commitments. It is likely that the majority of the operating costs will need to be covered by cash contributions.

### **4.3 In-kind contributions**

- 4.3.1 As has been stated, the model we advocate involves splitting the GLCP into a number of major work packages. These are then allocated to competent Lead Laboratories. Under the authority of the Project Leader these Lead Laboratories then take responsibility, technically and financially, for providing the work package to specification and on time. Their technical responsibility for maintaining their sub-system should continue during the operational phase of the project.
- 4.3.2 The process of allocating work packages to Lead Laboratories will have to be an iterative one involving the Project Leader, Lead Laboratories and the Member States and Regional Boards.
- 4.3.3 It is clear that these Lead Laboratories will therefore play a central role in the linear collider construction and maintenance. The major Particle Physics laboratories in the regions should take extensive leadership responsibilities. As Lead Laboratories they would take ownership of large sub-projects and manage contributions from smaller laboratories that have in-kind agreements with them. In this way it is hoped that a good match can be made technically and financially to the resources available in each Member State, thereby maximising their in-kind contribution.
- 4.3.4 The auxiliary systems and infrastructure go across all sub-systems and have to be under the direct responsibility of the central project management. However, they contain many items that can be considered as smaller in-kind contributions.

### **4.4 Cash Contributions**

- 4.4.3 Cash contributions have to cover all activities not distributed in-kind: central services and their contingency, Central Team and the central reserve as described in 4.2.
- 4.4.4 At this stage it is not possible to give a precise estimate of the fraction of the cost required in cash, but it could be of the order of 20% during construction and a much higher percentage of the annual operating cost.

### **4.5 Host State Premium**

- 4.5.1 It is generally accepted that the State (or region) that hosts the GLCP should provide extra resources beyond its normal “fair share”. The justification of this Host State Premium is the economic, technical, scientific and cultural advantages accrued by the state hosting such a large and prestigious international project. We advocate that this should amount to ~25% of the construction cost.
- 4.5.2 The Host State should therefore bear the cost of the acquisition of the site, the civil engineering associated with the tunnelling and the surface buildings, and of the

provision of services such as power, water and ventilation. Other services which might be provided by the nearby or "Host Laboratory", such as technical services, safety, security, medical services, library and procurement should also be included in the Host State's contribution. We estimate all these to amount to 20-25% of the construction cost.

- 4.5.3 During the operational phase of the collider, the amount of the Host State Premium may change, but nevertheless the concept should continue to be applied.

#### **4.6 Contributions from Member States**

- 4.6.1 Each region's contribution to the construction of the linear collider should be calculated by firstly subtracting the Host State Premium (~25%, as proposed in 4.5.1. above) from the total estimated construction cost, and then by apportioning the remaining share (~75%) to the three regions according to the total cumulative GDP of their Member States. In Europe, we propose that the individual "European" Member States should contribute to the "European" share according to their respective GDPs. This division of financial responsibility has been used at CERN since its inception and is accepted by CERN's Member States as fair. The other regions may choose this method of reaching their regional share, but are naturally at liberty to choose a different arrangement.
- 4.6.2 Care must be taken to ensure that cash contributions are relatively stable against exchange rate fluctuations. This can be achieved by comparing GDPs (when calculating contributions) using the exchange rates that prevail on a date that is as close as possible to the date on which payments are due (such a scheme has been implemented at CERN).
- 4.6.3 Additional contributions from Member States, above their GDP share, will be very welcome and these can either be in cash or in kind.

## **Chapter 5      Role and Relationship with the Host State and Laboratory**

### **5.1    Host State**

- 5.1.1 We see the Host State and the Host Laboratory as having unique roles in the Project. The Host State will be one of the original signatories to the intergovernmental agreement establishing the GLCP, and would be expected to play a major role in the negotiations which lead to the establishment of the GLCP and the drafting of the agreement.
- 5.1.2 As described in previous chapters, the Host State should agree to provide a separate and significant contribution to the GLCP over and above the share it would bear as a normal contributor.
- 5.1.3 It is not excluded, however, that the region in which the Host State resides agrees with the Host State to participate in the additional contribution.
- 5.1.4 The Host State will also be expected to assume responsibility for decommissioning the GLCP, using funds contributed, at least in part, by the other Member States through their contributions.
- 5.1.5 The Host State and the GLCP should conclude an agreement covering the establishment of the GLCP within that state, its rights, privileges and immunities as an intergovernmental organisation, as well as the mechanisms for decommissioning.

### **5.2    Host Laboratory**

- 5.2.1 The overall objective in using the Host Laboratory is to minimise the overhead element of the GLCP and to ensure that the full range of necessary services is available locally and does not have to be built up from a zero base.
- 5.2.2 The Host Laboratory, if necessary involving the Host State, should conclude a detailed agreement with the GLCP concerning the interaction between the two parties and their respective rights and obligations.
- 5.2.3 The GLCP and the Host Laboratory must be financially and managerially independent of each other. Services and deliverables required from the Host Laboratory by the GLCP should be technically and financially specified, the costing and payment basis defined, and the managerial interfaces established.
- 5.2.4 None of the general infrastructure investment made in the Host Laboratory by the Host State should belong to the GLCP and, unless agreed otherwise, should not be included in the accounting of the Host State Premium.

## **Chapter 6 Management Structure of the GLCP**

### **6.1 Introduction**

This section describes a possible management structure during construction of the linear collider. It is illustrated in the organisation chart in Figure 1. The structure will subsequently need to be adapted to the operation and upgrading phases.

### **6.2 Management Philosophy**

6.2.1 A clear line of responsibility and accountability has to exist.

6.2.2 The central project management and the managers of the high-level in-kind work-packages should be organized as an integrated project team.

6.2.3 The management has to be lean, effective and transparent.

6.2.4 Lead Laboratories will take the responsibility for large and self-contained work packages. This devolution of responsibility should minimize interfaces and reduce managerial multiplexing, and therefore the size of the central project team. These laboratories will also manage the regional in-kind contributions and interface with the Central Team.

6.2.5 The resources needed to deliver the work packages will come largely from laboratories/institutes/industry in the region that has taken the responsibility, but contributions from institutes in other regions that have suitable expertise or resources can be used as appropriate.

### **6.3 Project Leader**

6.3.1 The Project Leader (PL) has the overview and overall responsibility for the execution and delivery of the GLCP, and is the interface between the project and the Council. The Project Leader under Council, has the ultimate authority also for monitoring, changing and accepting in-kind contributions, for evaluating their progress and for reporting to Council.

6.3.2 The Project Leader chairs the Project Directorate. Council appoints the other members of the Directorate on the basis of proposals from the PL.

6.3.3 The Project Leader should be appointed for a 5-year term that is not renewable, except during the construction phase in which case the term may be extended until the completion of the facility.

6.3.4 The detailed management structure below the Project Directorate is the responsibility of the Project Leader and the Directorate. A possible senior management structure is outlined in the organisation chart (Figure 1).

## **6.4 Project Directorate**

- 6.4.1 The Project Directorate is the highest level committee of the project management structure and should be chaired by the Project Leader. The Directorate should be kept small and each member should have line-management responsibility together covering all the activities of the GLCP. At the very least the Directorate should comprise Directors of the critical departments: Accelerator or Technical, Experiments or Physics, and Administration. The Project Leader may decide to have a Deputy Leader who would also be a member of the Directorate.
- 6.4.2 Members of the Directorate should be appointed for renewable 5-year terms.
- 6.4.3 An "Extended Directorate", comprising the GLCP Directorate and the Heads of the Lead Laboratories (e.g. DESY, CERN, KEK, Fermilab, SLAC) or their nominees, should meet periodically.

## **6.5 Central Team and Project Office**

- 6.5.1 The Central Team is responsible for the central administrative infrastructure and those WBS packages not distributed as in-kind contributions. The staff of the Central Team will be employed directly by the Project, or will be seconded to it.
- 6.5.2 The Project Directorate will require a management and oversight structure to assist in all aspects of the project follow-up. We refer to this structure as the 'Project Office'. The Project Office, which is part of the Central Team, will maintain an up-to-date and comprehensive overview of all aspects of the project and as such will provide information to both the Management and the Project Oversight Committee. (See paragraph 7.3.1 and the organisation chart in Figure 1).
- 6.5.3 Even though the major part of the contributions to the Project will be 'in-kind', the Project Office should still provide the follow-up in the same manner as it does for the activities funded from the central budget.

## **6.6 Boards and Committees**

This project differs from previous large accelerator construction projects in several important respects and requires appropriate managerial and advisory structures.

### **6.6.1 Technical Management Board**

- 6.6.1.1 The task of the Technical Management Board is to oversee and steer the Project. Its task will change with time. Initially, it will have to advise the Project Leader on the definition of the work packages, check the competence and capacity of partners bidding to provide the packages, and recommend the Lead Laboratory for each package. Once the project has been defined and the responsibilities distributed, its task will change to overseeing the Project as a whole, identifying problem areas as early as possible and taking appropriate action.
- 6.6.1.2 Since the emphasis of the Technical Management Board changes as the Project matures, its membership may also change with time. However,

we feel that it is imperative that this Board contain all the people responsible for major components of the Linear Collider. In this way all the major players will be involved in decisions affecting the technical success of the whole Project and not just in their own work package.

- 6.6.1.3 The Board should be chaired by the Technical Director and have as members the Project Leader (ex-officio), the Director of the Physics Department, and the project leaders of the major work packages from the Lead Laboratories. The Technical Director may invite others to attend as he/she sees fit.
- 6.6.1.4 The Technical Management Board will report to the Project Directorate and through this body to the Council.

### **6.6.2 Work Package Boards**

- 6.6.2.1 A board should be established for each major work package. Each Work Package Board will report to the Technical Management Board. The chair should be the Work Package Leader and the members should be the Technical Director (ex-officio), the leaders of major sub-projects within the work package, and a senior member of the Lead Laboratory. Other members should be invited, including task leaders of other work packages, as appropriate

### **6.6.3 GLCP – Host Laboratory Coordination Committee**

- 6.6.3.1 Since the relationship between the GLCP and the Host Laboratory is crucial to the smooth running and success of the GLCP, a high level committee needs to be set up to manage the relationship and settle any problems.
- 6.6.3.2 The GLCP– Host Laboratory Coordination Committee should be chaired jointly by the GLCP Project Leader and the Director of the Host Laboratory. It should advise both the GLCP Directorate and the Host Laboratory Directorate. Additional members on the GLCP side should be the Deputy Project Leader, if appointed, and Directors. We recommend that this high-level committee should meet infrequently, and that its main business should be conducted by sub-committees meeting at more frequent intervals.

## **Chapter 7 Monitoring and Advisory Bodies**

### **7.1 Introduction**

7.1.1 Two sets of monitoring and advisory bodies are needed, one set to advise Council directly and the other set to advise the Project Directorate. These bodies are bi-coloured boxes in Figure 1.

### **7.2 Monitoring and Advice to the Project Directorate**

#### **7.2.1 Machine Advisory Committee**

The Project Directorate should appoint a Machine Advisory Committee composed of world experts to provide it with external advice. There should also be a link between the Machine Advisory Committee and the Project Oversight Committee (see below).

#### **7.2.2 Project Office**

The activities of the Project Office are described in section 6.5. Part of its function is oversight and as such it has an important monitoring role.

### **7.3 Monitoring and Advice to the Council**

#### **7.3.1 Project Oversight Committee (POC)**

- 7.3.1.1 The primary role of the Project Oversight Committee (POC) is to provide Council with an independent view of the state of the project. This assessment will be in large part based on data from the Project Office, and it is the main task of the POC to assess this information and report to Council. It is therefore not the intention, and it would clearly be very wasteful, for the POC to duplicate the work of the Project Office. However, the POC should call on expertise to conduct independent reviews of certain areas, especially critical-path items, technically critical items, or areas exposing large cost, schedule, and/or at-completion variances.
- 7.3.1.2 A further function of the POC is to report to Council on the effectiveness of the project management itself.
- 7.3.1.3 The POC's role should include oversight of the in-kind contributions.
- 7.3.1.4 The POC membership should comprise one Council member per region (one of whom should act as Chair), the Chair of the Finance Committee, and a small number of people experienced in the execution of large projects.

### **7.3.2 Scientific Advisory Committee (SAC)**

- 7.3.2.1 The Scientific Advisory Committee reports to the Council. Its members should be eminent scientists in the field. They should be appointed ad personam by Council, on the basis of proposals from the SAC, for a non-renewable 4-year term, with special arrangements to cover the initial period of the project. The chairman should be nominated by the members, and confirmed by Council for a two-year term. The Project Leader should be an ex-officio member of SAC.
- 7.3.2.2 The SAC advises Council on any matters affecting the scientific planning, strategy and priorities of the GLCP. These include major changes of parameters, upgrades, the experimental programme and any other matters on which Council wishes to receive advice.
- 7.3.2.3 The SAC should be consulted by Council in the search for the Project Leader and also on the other senior appointments that are submitted for approval by Council.

### **7.3.3 Finance Committee (FC)**

- 7.3.3.1 The Finance Committee consists of representatives of Regions, following the structure of Council. It advises Council on financial matters relating to the Project.
- 7.3.3.2 It oversees the planning and usage of the project's central budget. It recommends the annual central project budget to Council. It recommends to Council the purchasing rules for the central budget, and follows up their implementation
- 7.3.3.3 The FC monitors income and expenditure. This includes the monitoring of the financial aspects of the in-kind contributions. It adjudicates the award of major contracts above a value to be agreed. The FC is responsible for the annual audit of the project budget, and it should advise Council on possible consequences to be drawn from the auditors' report.

## **Chapter 8 Roadmap for Decision Making**

**8.1** The following steps need to be taken before the final decision to construct the GLCP can be made:

- Decision on the technology to be used.
- Decision on GLCP structure and sharing of costs.
- Decision on site.
- Acceptance of the Project Cost Estimate (of construction and operation).

**8.2** ICFA has formed the International Linear Collider Steering Committee (ILCSC) to help achieve the above. The ILCSC coordinates the work of regional steering groups.

- The ILCSC will set up in the summer of 2003 a group to recommend the technology choice to ILCSC in 2004.
- The ILCSC will set up an international design team charged to develop a Technical and Engineering Design, which will include a cost estimate for the linear collider. This design team will report to the ILCSC and will be dissolved once a more formal project organisation is formed.

**8.3** Having noted the steps described above, we recommend the following further actions:

1. A “political and financial” group at high level drawn from all regions should be formed as soon as possible to take forward the important questions of site choice, funding of the detailed design, cost sharing and form of the global project including governance. We recommend that “Europe” take the initiative to form this group.
2. We recommend that the CERN Council should as soon as possible organise a meeting to assess interest in the GLCP among “European” states, inviting representatives of potentially interested non-CERN-Member States.
3. Funding agencies from interested states should establish a pre-GLCP Council. This body should be dissolved when the GLCP is approved.
4. Once the technology and site have been chosen a group should be set up to prepare the detailed technical design and cost. This design group would most likely contain many of the same people as the ILCSC international design team.

These activities can and should proceed in parallel, as far as possible.

**8.4** We believe that the maturity of the various LC projects is such that a 4-year period from the technology choice to start of construction is a realistic goal.

## **Chapter 9 Conclusion**

The main recommendations set out in this document are summarised in the Executive Summary and are not repeated here.

The findings of the subgroup have been presented orally to both Restricted and Plenary ECFA and this document is our final submission to the ELCSG.

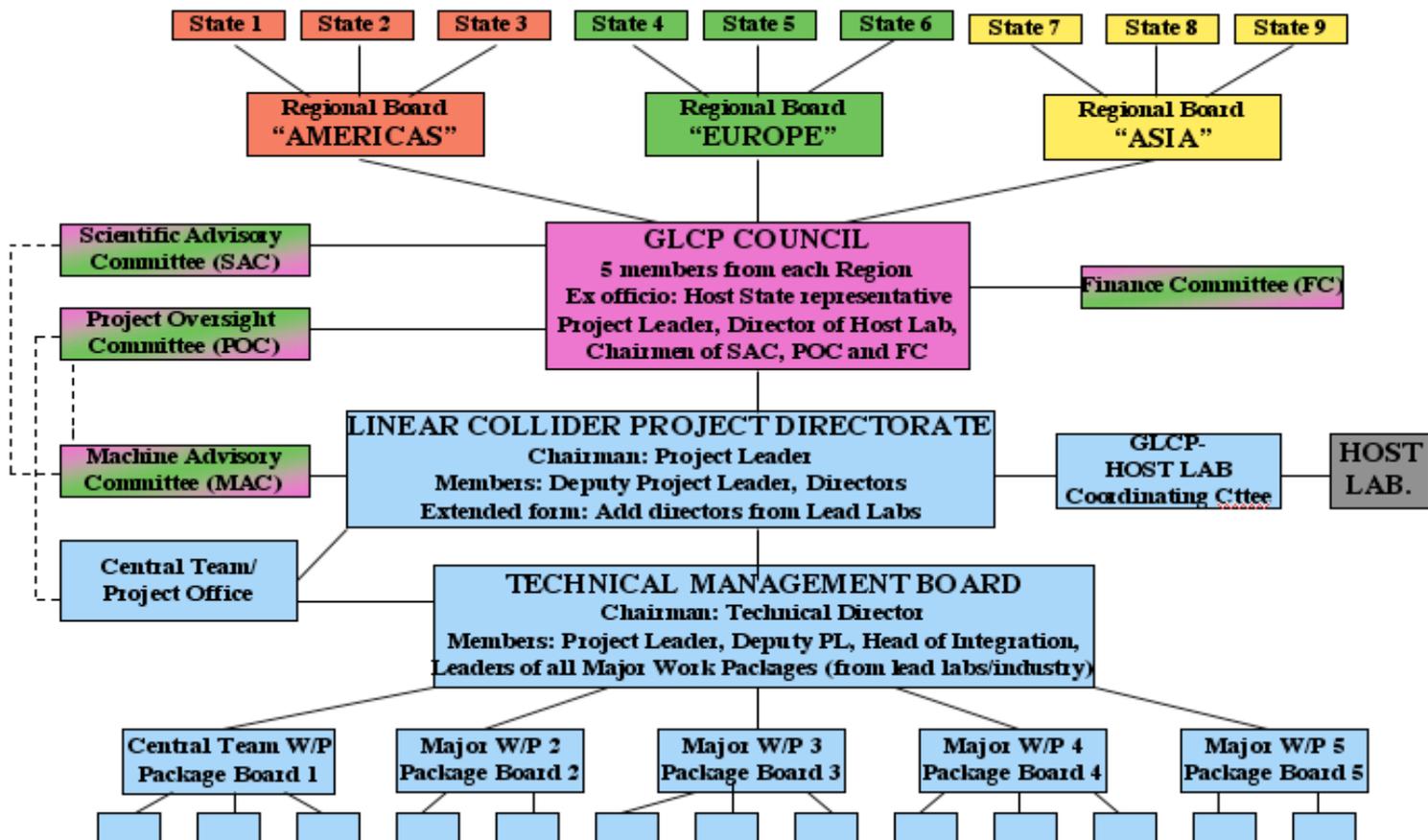


Fig 1 Governance (GLCP Council and above), Management (Light blue boxes below GLPC Council) and Monitoring (Bi-coloured boxes) structure of the GLCP

**Appendices:****Appendix a)****European Linear Collider Steering Group****Subgroup on Organisational Matters****Charge:**

- From a European perspective, work out a possible model or models for the design, construction and operation of a linear collider\* as a truly international project.
- Develop a road map towards setting up the project.

The following aspects should be considered:

1. Possible collaborative arrangements for the design, construction and operation of a linear collider.
2. Administrative structures needed to realise the above, including chains of responsibility.
3. Obligations and responsibilities of partners, including models for stable funding of the construction and operation.
4. Mechanisms for ensuring proper project and budgetary management.
5. Formal aspects of the collaborative arrangement, including, but not limited to, questions of free access, intellectual property etc.

**TIMESCALE:**

The aim should be to have a preliminary report by June 2003, to give as an oral presentation to the RECFA meeting. The target date for the final report is the end of 2003.

\* The linear collider being considered is a 0.5 to 1.0 TeV electron- positron machine with a latest completion date of about 2014, i.e. being complementary to and having a large temporal overlap with the LHC.

## **Appendix b)**

### **Membership of Sub-Group on Organizational Matters**

Torsten Åkesson

Ian Corbett

Umberto Dosselli

Jos Engelen

Joel Feltesse

Lorenzo Foa

Eva Gröniger-Voss

Peter von Handel                      Secretary

Kurt Hübner

George Kalmus                      Chairman

Helmut Krech

Chris Llewellyn Smith

Norman McCubbin

Guy Wormser

## Appendix c)

### Meetings of the SGOM and invited contributors.

The Working Group met five times in the period 5 November 2002 to 17 May 2003. The meetings and invited contributors are listed below.

#### **Meeting 1**, 5/6 November 2002 at RAL

The following presentations were made:

|                      |   |
|----------------------|---|
| M. Cox, UKAEA Culham | “JET and ITER”                          |
| R. Wade, PPARC       | “UK Perspective of the Linear Collider” |

#### **Meeting 2**, 6/7 December 2002 at CERN

The following presentations were made:

|  |   |
|--|---|
| S. Bertolucci, INFN Frascati           | “INFN and the LC”   |
| L. Maiani, CERN                        | “Considerations on the Organisation of the Linear Collider Project” |
| M. Bourquin, President of CERN Council | “The Status of CERN”  |

#### **Meeting 3**, 24/25 February 2003, CNRS Paris

The following presentations were made:

|                                     |  |
|-------------------------------------|--|
| J. Jaquinot, EURATOM/CEA, Cadarache | “Organisation of ITER”   |
| J. Credland, ESA, Paris             | “Organisation of Large International Co-Operative Projects within ESA” |

#### **Meeting 4**, 10/11 April 2003, DESY

The following presentations were made:

|                             |   |
|-----------------------------|---|
| S. Michalowski, OECD, Paris | “ The OECD’s role”                      |
| A. Wagner, DESY             | “ The DESY view point “                 |
| H. Schunck, BMBF, Bonn      | “ German perspective of the LC project” |

#### **Meeting 5**, 14-17 May, NIKHEF

The following presentation was made:

|               |  |
|---------------|--|
| H. Chang, FOM | “ Dutch perspective of the LC project” |
|---------------|--|

## Appendix d)

### Letter sent to the Community in September 2002

Dear ECFA Member,

I have been asked by the European Linear Collider Study Group to chair a sub-group on “Organisational Matters”.

Our charge is:

- From a European Perspective, work out a possible model or models for the design, construction and operation of a linear collider\* as a truly international project.
- Develop a road map towards setting up the project

\*This refers specifically to a 0.5 to 1.0 Tev electron-positron machine with a latest completion date of 2014.

The following aspects should be considered:

- Possible collaborative arrangements for the design, construction and operation of a linear collider.
- Administrative structures needed to realise the above, including chains of responsibility.
- Obligations and responsibilities of partners, including models for stable funding of the construction and operation.
- Mechanisms for ensuring proper project and budgetary management.
- Formal aspects of the collaborative arrangement, including, but not limited to, questions of free access, intellectual property etc.

We invite input to our deliberations from the community. We therefore are asking the ECFA representatives to gather information from their national communities and forward it to us in a digested form, for us to consider. Since the timescale for producing the report is quite short the earlier we receive this input the more impact it will have.

Sincerely

George Kalmus

## Appendix e)

### Reports considered by SGOM

[1] Report of the Working Group on the Future of Accelerator-Based Particle Physics in Europe,

ECFA/01/213 (September 2001), see also

<http://committees.web.cern.ch/Committees/ECFA/Welcome.html>

[2] DOE / NSF High-Energy Physics Advisory Panel Subpanel on Long Range Planning for US. High-Energy Physics, DOE / NSF (January 2002), see also

[http://doe-hep.hep.net/hepap\\_reports.html](http://doe-hep.hep.net/hepap_reports.html)

[3] Report of the Consultative Group on High-Energy Physics, OECD Global Science Forum (June 2002), see also

<http://www.oecd.org/EN/longabstract/0..EN-longabstract-18-nodirectorate-no-4-18113-18.FF.html>

[4] Proposal Organisation and Management of an International Collaboration on the TESLA Linear

Collider, TESLA Collaboration and DESY (October 2002), see also

[http://tesla.desy.de/new\\_pages/documents/Proposal\\_Organisation\\_Management.pdf](http://tesla.desy.de/new_pages/documents/Proposal_Organisation_Management.pdf)

[5] Report of the JLC-Globalization Committee JLC-KEK (December 2002), see also

<http://lcdev.kek.jp/GLCC>

[6] JLC Roadmap Report Draft (February 2003), see also

<http://lcdev.kek.jp/RMdraft/>

[7] A Global Accelerator Network, ICFA Task Force Reports (December 2001), see also

[http://www.fnal.gov/directorate/icfa/icfa\\_tforce\\_reports.html](http://www.fnal.gov/directorate/icfa/icfa_tforce_reports.html)

[8] International Linear Collider Technical Review Committee – Second Report, ICFA (February 2003), see also

<http://www.slac.stanford.edu/xorg/ilc-trc/2002/2002/report/03rep.htm>

[9] International Linear Collider Steering Committee, ICFA (2002, 2003) see also

<http://www.lns.cornell.edu/~preprint/tigner/index.html>

[10] High Energy Physics Facilities Recommended for the DOE Office of Science Twenty-Year Roadmap, HEPAP (March 2003), see also

[http://doe-hep.hep.net/HEPFacSub/HEPAP\\_FacilitiesMar03.pdf](http://doe-hep.hep.net/HEPFacSub/HEPAP_FacilitiesMar03.pdf)

[11] Convention for the Establishment of a European Organization for Nuclear Research, CERN (1953, 1971), see also

<http://legal-service.web.cern.ch/legal-service/conventionE.htm>

[12] Understanding Matter, Energy, Space and Time: The Case for the  $e^+ e^-$  Linear Collider, Worldwide Linear Collider Study Group (April 2003), see also

[http://sbhep1.physics.sunysb.edu/~grannis/wwlc\\_report.html](http://sbhep1.physics.sunysb.edu/~grannis/wwlc_report.html)

**Appendix f)****Global Linear Collider Project  
Specimen Convention<sup>1</sup>****Preamble**

The Governments of

Considering that ....

Convinced that...

Affirming that...

Agreeing that ...

Have agreed as follows

# SPECIMEN CONVENTION

**Article 1****Establishment of the Project**

- (1) A Global Linear Collider Project, hereinafter referred to as “the Project”, is hereby established as an intergovernmental organization.
- (2) The Project shall have its seat at ....., in [Country X], hereinafter referred to as the “Host State”.

**Article 2****Purpose of the Project**

- (1) The Project shall design, construct, and operate an electron-positron linear collider with centre-of-mass energy of 0.5 TeV or more for the purpose of research of a pure scientific and fundamental nature. The Project shall have no concern with work for military requirements and the results of its experimental and theoretical work shall be published or otherwise made generally available.
- (2) In achieving its aims the Project shall strive to promote contacts between, and the interchange of, scientists and engineers, the dissemination of information to other scientists, the provision of advanced training and outreach to the public.

<sup>1</sup>The Specimen Convention refers to further annexes and protocols, but these have not been specified.

**Article 3****Legal Personality**

- (1) The Project shall have international legal personality, in particular, the capacity to conclude agreements with States and/or International Organizations.
- (2) The Project shall enjoy, in the territories of the participating countries, hereinafter referred to as the “Members”, the legal capacity necessary for the fulfilment of its purpose, including the ability to
  - a. conclude contracts;
  - b. receive, hold, and disburse funds, and maintain bank accounts;
  - c. acquire, hold and dispose of property;
  - d. employ staff;
  - e. obtain licences; and
  - f. institute legal proceedings

**Article 4****Regional Boards**

The Members will adhere to one of the regions “Europe”, “Americas” and “Asia”. Each region will establish a Regional Board by separate agreements among the Members of that region and in line with this convention and its annexes. The role and competence of these Regional Boards in the context of the Project as well as a frame for their rules of procedure are set out in Annex XX to this Convention.

**Article 5****Statutory Bodies**

The Statutory Bodies of the Project shall be the Council and the Project Leader.

**Article 6****The Council**

- (1) The Council shall have fifteen members, hereinafter referred to as the “Delegates”. Each Regional Board shall nominate five Delegates.
- (2) Each Delegate has one vote.
- (3) In addition to the voting members, Council should have, in attendance, a representative from the Host State, the Project Leader, and the chairs of its advisory bodies.
- (4) The presence of at least three Delegates from each region shall be necessary to constitute a quorum.
- (5) The Council shall elect from among the Delegates a Chair and two Vice-Chairs, who shall each serve for a period of two years and may be re-elected once for a maximum period of a further two years. The Chair and Vice-Chairs shall all be Delegates of different Regional Boards.

- (6) The Council shall meet at least twice a year. The Council may hold an extraordinary session at the request of a Delegate or of the Project Leader. In addition a plenary session shall be held once a year, in which all Members shall be entitled to participate, the right to vote being, however, restricted to the Delegates. Sessions of the Council shall take place at the headquarters unless the Council decides otherwise.
- (7) The Council shall, subject to the provisions of this Convention:
- a. determine the Project's policy in scientific, technical and administrative matters;
  - b. appoint and replace the Project Leader and other Directors pursuant to the procedure to be established by it;
  - c. decide, on the proposal of the Project Leader, the main structure of the Project and the staff complement;
  - d. appoint the external auditors;
  - e. establish the Finance Committee, Project Oversight Committee and Scientific Advisory Committee and such other subsidiary bodies as may be necessary for the purposes of the Project, and decide on their remit, rules of procedure, and membership;
  - f. decide, on the proposal of the Project Leader, on the total budget for the various phases of the Project;
  - g. approve changes to the overall contributions by Members as provided for under Articles 8.3 and 8.4 of this Convention;
  - h. adopt the annual budget within the agreed total budget, programmes of activities and annual accounts;
  - i. adopt Staff- and Financial (including Procurement) Rules and Regulations;
  - j. decide long-term scientific and financial strategy;
  - k. adopt the annual report;
  - l. approve the conclusion of agreements or arrangements between the Project and States or International Organizations;
  - m. decide on acquisition, sale and mortgaging of land and other titles of real property;
  - n. approve, on the proposal of the Project Leader, agreements governing relations between the Project and the Host Laboratory;
  - o. approve the accession of new Members;
  - p. recommend to the Members, in accordance with Art. 15, amendments to this Convention;
  - q. adopt its own rules of procedure
  - r. have such other powers and perform such other functions as may be necessary for the purpose of this Convention.
- (8) Decisions on amendments to this Convention, accession of new Members,...., election of the Chair and Vice-Chairs, appointment of Project Leader, .... shall be taken by Council by unanimity. Decisions on budgetary matters,....., adoption of its own rules of procedure, ..... shall be taken by Council by two-thirds vote. All other decisions shall be taken by Council by simple majority.

(9) Decisions taken by Council:

“by unanimity” shall mean that all votes of Delegates present and voting are cast in favour, abstentions not being counted, provided that the number of such abstentions does not exceed one third of the total number of Delegates;

“by two-thirds vote” shall mean that the number of votes in favour is or exceeds two thirds of the votes cast by Delegates present and voting, abstentions not being counted;

“by simple majority” shall mean that the number of votes in favour is a majority of the votes cast by Delegates present and voting, abstentions not being counted.

- (10) Decisions relating to matters of public health and safety, licensing, and the protection of the environment shall require the concurrence of the representative of the Host State.

## Article 7

### The Project Leader, Directorate, and the Staff

- (1) The Project Leader is the executive organ of the Project. The Project Leader shall act in compliance with this convention and decisions of the Council, and shall be responsible to the Council for the execution of his or her duties.
- (2) The Project Leader chairs the Directorate which shall be composed of up to six Directors. In the exercise of its legal capacity the Project shall be represented by the Project Leader and one other Director. The Directorate should meet regularly with the directors (or their nominees) of the major contributing laboratories.
- (3) The Project Leader shall be appointed for a term of five years by Council. The first Project Leader may be reappointed for a second term or until the completion of the construction of the Linear Collider. The Project Leader shall be an employee of the Project.
- (4) The Directors shall be appointed by Council on the recommendation of the Project Leader for a term of five years, which may be renewed. The Directors shall be employees of the Project.
- (5) The Directorate shall act according to rules of procedure approved by the Council.
- (6) The Project Leader shall take all measure necessary for the management of the Project, the execution of its activities, the implementation of its policies and the fulfilment of its purpose. In particular, the Project Leader shall
- a. Prepare and submit to the Council
    - Long-term project plans;
    - The budget
    - Staff-, Financial- and Procurement Regulations;
    - The annual reports
  - b. Be responsible for the safety and undertake all organizational measures needed to meet the relevant safety, licensing and regulatory requirements;
  - c. Undertake, where necessary with the Host State, steps to obtain the permits and licences required for the construction, operation and exploitation of the Project;
  - d. Ensure the quality and fitness for purpose of components and systems procured for use by the Project;

- e. Conclude, subject to prior approval of the Council, agreements or arrangements with Parties, other States or international organizations on behalf of the Project and supervise their implementation;
  - f. Monitor and control the execution of the annual programmes with respect to timing, results and quality, and accept the completion of the tasks.
- (7) The Directors shall attend sessions of the Council unless the Council decides otherwise.
- (8) The staff shall be under the management authority of the Project Leader and shall be appointed according to staff rules and regulations prepared by the Project Leader and approved by Council.

## **Article 8**

### **Contributions**

- (1) Each Member shall contribute to the Project through the Region to which it belongs. Regional contributions shall be made in accordance with Protocol A attached to this convention. These contributions comprise:
- Financial Contributions which shall be remitted in cash to the Project;
  - The supply of specific components, items of equipment, consumable equipment and other goods and services, hereinafter referred to as “in-kind contributions”, which shall be valued according to a common costing model;
  - The assignment to the Project of suitably qualified personnel who remain employed by their home institution but come under the management control of the Project Leader.
- (2) The value of the contributions, in cash or in kind, of each Region shall be according to the cumulated Gross Domestic Product (GDP) unless Council decides otherwise by unanimity.
- (3) Amendment of protocol A requires the approval of the Council taken by two-thirds vote. The assignment and the re-assignment of contributions between Members within each Region shall be agreed, controlled and monitored by the appropriate Regional Board, and shall be subject to the concurrence of the Project Leader.
- (4) In the event that funding problems arise that may affect a Member’s ability to fulfil its responsibilities in accordance with this Convention, that Member shall notify and consult with the Project Leader and the other Members of its region, with the objective of seeking a solution at the regional level. Should that fail, the representatives of the Region shall raise the matter at Council for project-wide resolution.

## **Article 9**

### **Information and Intellectual Property Rights**

- (1) The Members will make available to the Project, free of charge, their existing relevant knowledge, protected or not, of which they can legally dispose.
- (2) The Members will make available to the Project, free of charge, all knowledge, protected or not, generated in the frame of the Project.

- (3) All intellectual property produced by the Project is owned by the Project, except where covered by separate contractual agreement. All intellectual property owned by the Project may be used free of charge by any Member for non-commercial purposes.

## **Article 10**

### **Host State and Host Laboratory Agreement**

The Project shall conclude an agreement with the Host State covering its establishment within that State, the rights, privileges and immunities it shall enjoy, and the mechanisms for decommissioning. An agreement between the Project and the Host Laboratory will detail the role and responsibility of the Host Laboratory for the infrastructure support of the Project.

## **Article 11**

### **International Status**

- (1) The Project and its staff, as well as the representatives of the Members, shall enjoy in the territory of each Member the privileges and immunities necessary for the fulfilment of its purposes and for the exercise of its functions.
- (2) These privileges and immunities are set out in Annex YY to this Convention. [Or in a separate multilateral protocol to be signed by all Members]

## **Article 12**

### **Audit**

The Project will be audited according to the rules laid down in the Financial Rules and Regulations.

## **Article 13**

### **Signature, Ratification, Acceptance, Approval, Entry into force**

- (1) This Convention shall be open for signature by the States participating in the Project until the date of its entry into force in accordance with paragraph 2 of this Article.
- (2) This Convention shall enter into force 30 days after the deposit of instruments of ratification, acceptance or approval of this Convention by the Host State and by sufficient other States to cover [90%] of the estimated contributions required to construct the Linear Collider.
- (3) The instruments of ratification, acceptance or approval of this Convention shall be deposited with the Director General of the United Nations Educational, Scientific and Cultural Organisation, who shall act as the Depositary.

## **Article 14**

### **Notification**

- (1) The Depositary shall notify each State party to this Convention of:

- a. the date of deposit of each instrument of ratification, acceptance, approval or accession;
- b. the date of entry into force of this Convention and of any amendment;
- c. the denunciation of the Convention by a State party.

## **Article 15**

### **Amendment Procedure**

Amendments to this Convention may be proposed by any Member through the Regional Board it adheres to according to the rules of procedure adopted by the Regional Board. The Council shall decide on such proposals by unanimity. The amendment will enter into force upon ratification or approval (according to the individual constitutional requirements) by at least two thirds of the Members representing at least two thirds of the total weight attributed to all regions.

## **Article 16**

### **Accession**

- (1) After the entry into force of this Convention, any State or International Organisation may accede thereto following a decision of the Council taken by unanimity.
- (2) The Council shall determine the conditions and modalities of accession of any State or International Organization.
- (3) A State or International Organization that wishes to accede to this Convention shall notify the Project Leader, who shall inform the Members of this request at least six months before it is submitted to the Council for decision.
- (4) Accession to the Convention shall come into effect upon the deposit of the instruments of accession with the Depositary.

## **Article 17**

### **Duration**

- (1) The Project shall initially have a duration of 25 years, starting from the entry into force of this Convention.
- (2) The Council shall at least six years before the expiry of the Project establish a special committee chaired by the Project Leader that shall advise the Council on whether the duration of this Agreement should be extended, having regard to the progress of the Project. The Committee shall submit its report to the Council within one year after its establishment.
- (3) The Council shall decide by unanimity on the basis of the report whether to extend the duration of the Project, at least five years before the expiry.
- (4) The Project shall establish and accumulate a separate fund from its annual budget for the decommissioning after the Project is terminated.
- (5) At the termination of the Project the facilities shall be handed over to the Host State and the decommissioning fund shall be transferred to the Host State.

- (6) The Host State, after having received the decommissioning fund referred to above, shall take sole responsibility for the decommissioning of the facilities.
- (7) A surplus shall be distributed among those Members that are still Members at the time of dissolution in proportion to the contributions actually made by them from the dates of their becoming Members of the Project. In the event of a deficit, this shall be met by the existing Members in the same proportions as those in which their contributions have been assessed for the financial year then current.

## **Article 18**

### **Settlement of Disputes**

- (1) Any dispute between two or more Members concerning the interpretation or application of this Convention, which is not settled by the good offices of the Council, may be submitted by either party to an international Arbitration Tribunal, in accordance with paragraph (3) of this Article.
- (2) If a State party to this Convention intends to submit a dispute to arbitration, it shall notify the Chairman of the Council
- (3) The international Arbitration Tribunal referred to in paragraph (1) of this Article («the Tribunal») shall be governed by the following provisions:
  - a. Each party to the dispute shall appoint one member of the Tribunal. The members thus appointed shall jointly choose a third member, who shall be the Chairman of the Tribunal. In the event of disagreement between the members of the Tribunal on the choice of Chairman, the latter shall be appointed by the President of the International Court of Justice at the request of the members of the Tribunal.
  - b. If one of the parties to the dispute fails to appoint a member of the Tribunal and has not taken steps to do so within two months following a request by the other party, the other party may request the President of the International Court of Justice to make the appointment.
  - c. The Tribunal shall determine its own procedure.
  - d. There shall be no right of appeal against the award of the Tribunal, which shall be final and binding on the parties. In the event of a dispute concerning the import or scope of the award, it shall be incumbent upon the Tribunal to give an interpretation at the request of either party.

**Article 19****Withdrawal**

- (1) After the Convention has been in force for ten years, any Member may notify the Depository of its intention to withdraw, whereupon the Depository shall notify the other Members and the Project Leader of such intention.
- (2) The withdrawing Member shall not remove from the Project the equipment it contributed and shall keep responsibility for its contribution to the construction of the Project and to the decommissioning fund, as well as for any liability or additional obligation incurred prior to the effective date of withdrawal. Before the withdrawal becomes effective, the Members shall reach agreement concerning the terms and conditions of withdrawal including any damage caused by that Member's withdrawal. The withdrawal shall take effect at the end of the financial year following the agreement reached among the Members.
- (3) The withdrawing Member shall retain the rights it has acquired up to the date on which the withdrawal takes effect.

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