

VI. Management Plan

CIG will need the expertise, vision, and guidance of the community if it is to remain a nimble and evolving organization. Consequently, we are adopting a *community-centric* management structure which draws upon features of successful NSF supported community infrastructure projects in the Earth sciences. The management plan, outlined here, has been codified in a set of by-laws available on our web site (<http://geodynamics.org>) and will be adopted before the start date of the project.

A. Institutional Membership and Executive and Standing Committees

CIG will be an institutionally-based organization governed by an Executive Committee. The structure of CIG will recognize member institutions, which are educational and not-for profit organizations with a sustained commitment to CIG objectives, and a number of foreign affiliate members. The XX member institutions and YY foreign affiliates that were enrolled as of the proposal submission date (February 15, 2004) are listed in Table 1.1. This listing may change, however, because CIG will be an *open organization*, available to any institution seeking to collaborate on the development of open source software for computational geodynamics and related disciplines.

The Executive Committee will be the primary decision-making body of CIG; it will meet at least twice per year to approve the annual science plan, management plan, and budget, and to deal with major business items, including the election of a Nominating Committee. With the Director, the Executive Committee will handle the day to day decision-making responsibilities through its regular meetings, teleconferences, AccessGrid sessions, and electronic mail. The Executive Committee will have eight members. It will have five voting members, the Chairman, the vice Chairman, two members at-large, and the Director. Exclusive of the Director, these members are elected by representatives of member institutions for staggered three-year terms. The three nonvoting members, are the Chief Software Architect and the Chairman of the two standing committees. The Executive Committee will have the authority to approve proposal submissions and contractual arrangements for the Center.

During the formative stages of CIG, the Writing Committee, listed in Section IV.B, will work as an acting Executive Committee. Its principle duty, once the proposal is submitted, will be to approve initial Member Institutions and a Nominating Committee, as described in the By Laws. The Member Institutions will then elect an Executive Committee during the summer of 2004 before the expected official start date of CIG funding.

The CIG will have two Standing Committees (one Geoscience, one Computational Science) consisting of seven elected members including a chairperson. The Standing Committees will provide guidance within all of the sub-disciplines of computational geodynamics. Their principal duty will be to assess the competing objectives and needs of all the sub-disciplines covered by CIG.

B. Administration

The Director will be the Chief Executive Officer of the organization and will bear ultimate responsibility for its programs and budget. The Director's responsibilities will include: (a) devising a fair and effective process for the development of the science plan, based on proposals or work plans such as those submitted to the Executive Committee by the two Standing Committees, and overseeing the plan's implementation, (b) acting as P.I. on proposals submitted by the core CIG facility, retaining final authority to make and implement decisions on grants awarded to the core facility and contracts, (c) ensuring that funds are properly allocated to various CIG activities, (d) overseeing the preparation of technical reports.

The Chief Software Architect (CSA) will serve as a non-voting member of the Executive Committee. His role will be to provide advice and perspective to the Executive Committee on the overall composition, integration, and balance between software development activities of the organization. He will provide frequent assessments of our software, identify new opportunities in both computational science and methods for software development, and provide evaluations of prospective members of the Software Development Team. The Executive Committee retains the authority to appoint the CSA.

C. Advisory Council.

The Advisory Council provides advice and input from the larger scientific community. The Advisory Council will consist of five scientists from educational, non profit, industry, and governmental institutions with a major commitment to research in computational geodynamics and related fields. Members of the council will be elected by two thirds vote of the Executive Committee. They would hold fixed terms of three years in duration. Its composition is expected to represent the primary scientific disciplines encompassed by computational geodynamics and closely related fields. The Advisory Council will meet annually to review all aspects of the CIG and provide advice as requested by the Executive Committee. It will submit an annual report to the Director and the Chairman of the Executive Committee.

D. Formulating CIG Priorities and Management of its Resources.

Concepts and plans for CIG activities will come directly from member institutions and their elected committees. Ideas and plans will move from members to the Standing Committees and finally to the Executive Committee (Figure 6.1). The Standing Committees will formulate a prioritized list of tasks for software development for the coming year, how these tasks are both inter-related and related to the broader needs of the community, and then transmit this as a recommendation to the Executive Committee. At least on a yearly basis, the Executive Committee will allocate resources to specific software development tasks. Following this allocation of resources, the EC will appoint small committees, Task Groups (consisting of one member from each Standing

Committee and several others from the user community), to interface directly with the software development team (SDT).

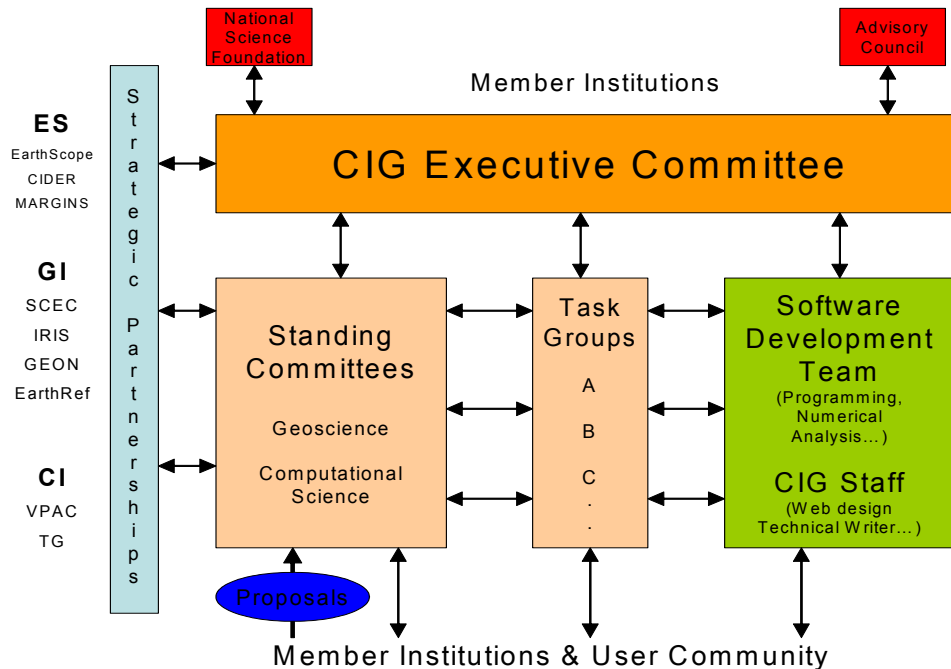


Figure 6.1 Internal management of CIG and relationship with Member Institutions and other communities. Member Institutions directly elect Executive Committee and Standing Committees. The Standing Committees interact directly with the user community and vet proposals from them. Task Groups are set up for new projects (software development tasks) with representation from both the Standing Committees and user communities and then interact directly with the Software Development Team. The EC and the SCs interact directly with other ES (Earth Science), GI (Geoinformatic), and CI (CyberInfrastructure) activities on the national and international level through Strategic Partnerships.

It is expected that members of the Standing Committees will be fully engaged in dialog with the user community and active users of CIG software. Besides the constant dialog that such committee members would naturally have with the community, CIG will have a formal process for bring new ideas up from the community. On a continuous basis, users from Member Institutions will be able to submit one page proposals for new CIG software development tasks. These proposals can be submitted at any time and would be posted on the web for the community to read and evaluate. There will be a comments page, similar to the one on our <http://geodynamics.org> web site, where members of the user community can add scientific comments and evaluation. Periodically, but at least once per year, the Standing Committees will evaluate these proposals in light of other information obtained from the community, formulate a prioritized list of tasks, and then submit it to the Executive Committee.

At its disposal, the Executive Committee will have resources to respond to the evolving community needs expressed through these task lists, including the Software Development Team and funds for contracts, as described in Section V. However, the Executive Committee will also put into place two mechanisms for generating new resources and funds for CIG.

- *Augmented funding.* CIG will agree to develop additional software upon receipt of augmented funding. For example, a PI at a Member Institution may submit a normal science proposal to a federal agency in which the proposed work is either wholly or in part dependent upon software not yet available. This software would presumably be more specialized than the highest priority and core CIG tasks, but still encompassed within the mission of CIG and needs of the community. Following submission of a one page proposal as described above, the Executive Committee determines whether or not CIG can develop this software. If CIG can develop the software, the EC will detail the resources and funding required on a form for attachment to the PI's proposal. If the proposal successfully passes through peer review and the federal agency agrees to fund the project with augmentation to CIG funding, we will develop the software.
- *Collaborative proposals.* In time, CIG will have a specialized staff with skills in software development, numerical analysis, information technology, and related fields, skills not readily accessible within the geoscience community. We believe that members of the community will formulate collaborative research projects with SDT members. If such collaborative projects are judged to be of high merit for CIG by the EC, CIG will develop collaborative proposals. We expect one target of opportunity to be federal programs that require collaboration between scientists from both information technology and the domain sciences, such as the geosciences. It would be expected that such projects would provide funding for both external PIs and members of the SDT.

Software developed through either of these two mechanisms will be open source and made available to the community without restriction, like all CIG software. During its first two years of operation CIG must by necessity focus on a core set of objectives as described in Section V, and would most likely be unable to respond to these two mechanisms of expansion and funding. However, if CIG is successful, then these two approaches would likely play a growing role within CIG after its formative period.