

NSF IUCRC on
Geomechanics and Mitigation of Geohazards (GMG)
DRAFT- Subject to IAB Approval

- CENTER BYLAWS –

ARTICLE I - INTRODUCTION

1.1 The following Bylaws will be used to govern the Center of Geomechanics and Mitigation of Geohazards at the California Institute of Technology (CENTER), an NSF Industry/University Cooperative Research Center (I/UCRC).

1.2 The Bylaws can be amended at any time by an affirmative vote of two thirds of the members of the Industrial Advisory Board (IAB) and the affirmative vote of the California Institute of Technology.

1.3 These Bylaws form part of the Membership Agreement with participating Members. Any conflict between a Membership Agreement and these Bylaws resulting in discrepancy will require review and approval by the Center Director, the Site Directors, and two thirds of the IAB representatives.

ARTICLE II - PURPOSE

Vision Statement

2.1 CENTER is designed to provide a forum for industry/university cooperative research.

Mission Statement

2.2 The mission of the Center is to advance the understanding of geomaterials failure in the presence of fluids for industry applications and geohazard mitigation by leveraging cutting-edge modeling, computing,

experimental, geophysical and remote-sensing research.

Research Focus

2.3 The common research platform for GMG is the development of improved methods to assess the effects of fluids on deformation and failure of geomaterials, in particular

- fracture geometry, transport properties, seismicity, and fluid flow induced by fluid injection in the subsurface and
- ground deformation, shaking, and potential damage to infrastructure due to induced and natural fault activity.

ARTICLE III - MEMBERSHIP

- 3.1 The CENTER membership contribution is \$50,000 for research projects inclusive of the 10% required overhead.
- 3.2 An entity may support the Center with one, two, or more membership contributions.
- 3.3 An “In-Kind” membership is possible upon approval by the Center Director and co-Directors, with the consensus of the IAB. A member Organization that provides “In-Kind” membership contributions in lieu of cash payments will provide a listing of categorized items to be considered as its “In-Kind” support for approval.
- 3.4 An Organization can observe one IAB meeting with approval of the IAB and with the understanding that the observing organization will need to sign a non-disclosure agreement.

ARTICLE IV - MEMBERSHIP MODALITIES

4.1 **Research Project:** Precompetitive research projects proposed by faculty researchers in response to industry identified needs. They are supported by CENTER membership contributions as recommended by the IAB vote.

4.2 Enhancement Project: Additional funds provided by an interested company or companies (beyond membership contributions) can be used as supplemental funding for research projects with the clear understanding that knowledge and information generated will be equally shared among all IAB members.

4.3 Mini - Consortium: Supported by a group of IAB Member companies providing additional funds (beyond membership contributions) for a specific project of their interest. Knowledge and IP generated by this type of projects will be restricted to the group of companies that funded the research. CENTER membership contributions will not be used to support this type of projects.

4.4 Company Sponsored Project: Supported by a company providing additional funds for a specific project of their interest. Knowledge and IP generated by this type of projects will be restricted to the specific company that funded the research. Sponsored Projects will not be included in the I/UCRC research portfolio nor will be supported by CENTER funding.

ARTICLE V- ORGANIZATION

5.1 The IAB comprises one representative of each member company. A member company can send as many delegates to the IAB meetings as it considers appropriate, but only one of them can be a voting IAB member.

5.2 The IAB will select a Chair and a Vice Chair for a two-year term after approval of the Bylaws and no less than every two years thereafter. Generally, the Vice Chair will become the IAB Chair when a new Vice Chair is elected by the IAB members.

5.3 The IAB Chair and Vice Chair will form an Executive Committee (EC).

5.4 Members paying membership contributions will have one representative on the IAB. An Organization providing additional memberships will be entitled to have one voting representative on the IAB for every membership paid in full. The voting procedure is detailed in Article XIII.

5.5 All IAB members will participate in the strategic planning of the CENTER and will assist the participating faculty in identifying pre-competitive, generic, industry-related, research problems. Furthermore, IAB members will assist in identifying appropriate industrial internship opportunities for students; help the

CENTER Director and co-Directors in recruiting new members; review the research and educational programs and accomplishments of the CENTER; and recommend mid-course changes to meet IAB needs and concerns.

5.6 The CENTER Director will be responsible for all CENTER activities. The CENTER Director will be Dr. Jean-Philippe Avouac.

5.7 The CENTER co-Directors will assist the CENTER Director. The CENTER co-Directors will be Dr. Domniki Asimaki and Dr. Nadia Lapusta. In the event Dr. Avouac is unable to serve as the Director, one of the co-Directors will assume the Director role, subject to approval by the NSF.

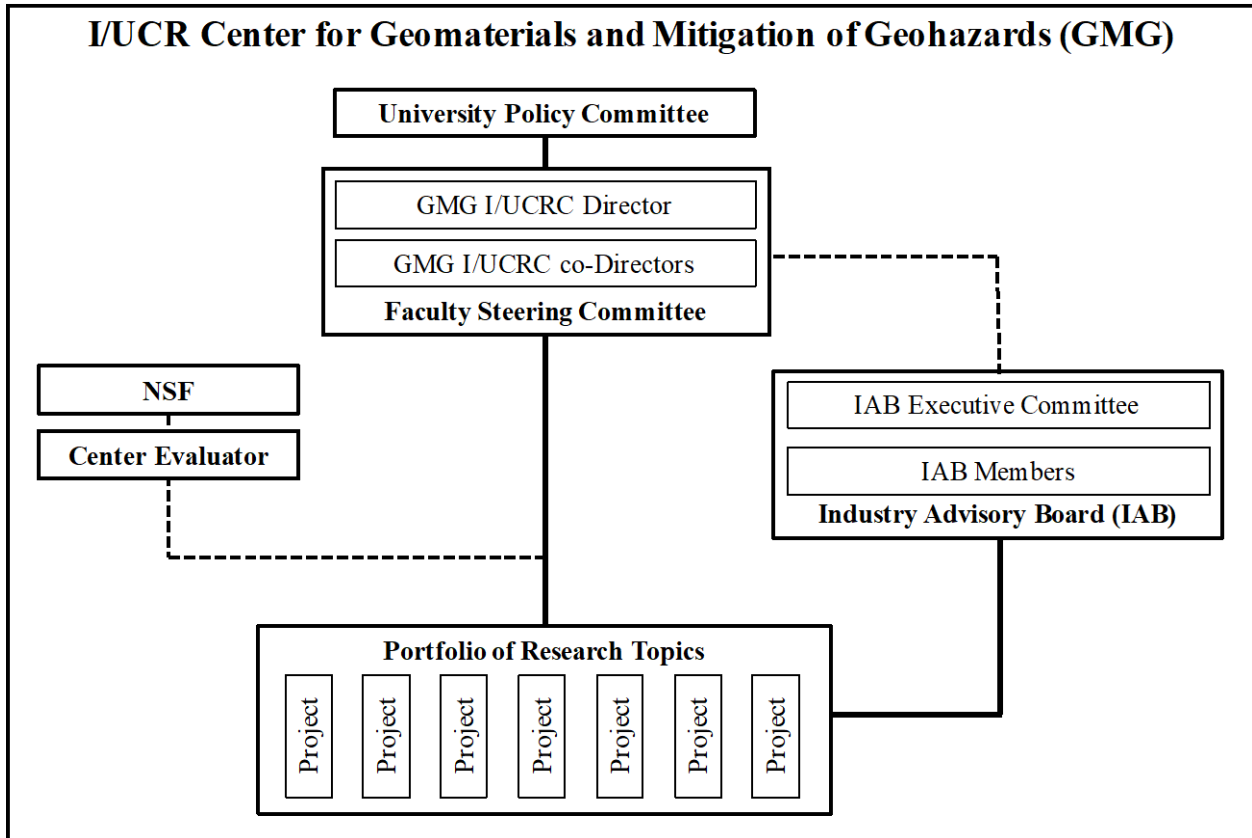
5.8 Project Principal Investigators will manage specific research projects funded by the Center and will report directly to the CENTER Director. Project Principal Investigators will be identified in specific project proposals.

5.9 A Center Assessment Coordinator (AC), appointed by the National Science Foundation (NSF) via Venturewell, will work closely with the Center and the IAB to share IUCRC practices and objectively assess and report on Center activities and progress. The AC will attend Center's IAB meetings on behalf of NSF and prepare an NSF report that will be shared with the cognizant NSF Program Director within a week after each meeting, facilitate L.I.F.E (Level of Interest Feedback Evaluation) system dialogue, administer NSF Surveys, prepare the Annual Center Assessment Report, and interview Center's inactive members.

5.10 The University Policy Committee will be comprised from the Caltech Administration and will facilitate the operation of the Center while ensuring compliance with the policies of Caltech. This committee will include the chairs of the GPS and EAS Divisions and a representative from the Industry Relation Office.

5.11 The CENTER Managing Director will conduct the day-to-day routine management and coordination of the Center activities,

Figure 1. CENTER Organizational structure.



ARTICLE VI- ADMINISTRATION

6.1 The Center Director and two co-Directors will work with the Industrial Advisory Board on strategic plans for the Center and on recruiting new Members.

6.2 The CENTER Director and co-Directors will constitute the Faculty Steering Committee which will review CENTER operational procedures and policy matters. The Steering Committee will meet at least once every month.

6.3 The Center Director will submit an annual operating and research budget to the IAB for review and recommendations. This will be available for review prior to the Spring IAB Meeting each year.

6.4 The Center Director, upon recommendation of the Industrial Advisory Board and the Faculty Steering Committee, will authorize the use of membership contributions by the Project Principal Investigators in support of Center research.

6.5 The Director and co-Directors will work with the appropriate departments on

recruiting graduate students for the Center and will set standards for student participation; monitor student progress towards a degree; set goals for recruiting students (especially minority and women); promote multidisciplinary nature of the research program; and, help students to organize industrial internships.

6.6 Each CENTER graduate student will have a Center faculty mentor and, if available, at least one Center industrial advisor. The faculty mentor is responsible for advising the student on university, departmental, and Center policies.

ARTICLE VII- REPORTS

7.1 The Center Director shall provide a semiannual report to the Members and to the National Science Foundation.

7.2 The Principal Investigators shall provide interim reports to the Center Director and to the Members as necessary at the completion of major research tasks. These interim reports will be distributed via the Center web site and email notification to all members once posted.

7.3 All administrative issues, concerns or conflicts regarding the activities of research and reporting are responsibilities of the Center Director.

ARTICLE VIII- MEETINGS

8.1 The Center Director, co-Directors and the IAB Chair will establish the schedule of activities and meetings for the Center as well as the agenda for the semiannual research review meetings.

8.2 The academic and IAB members for the CENTER will meet twice a year (spring and fall) with the date and location determined at the previous IAB meeting. CENTER IAB members are welcome to host/sponsor a Center meeting with the consensus of the IAB.

8.3 The IAB will meet twice a year to review research results, select projects, review budgets, and discuss the strategic plans for the Center. The IAB review meetings will coincide with the semiannual CENTER meetings. A Member may send more than one representative to the IAB meetings, but may only have one voting representative per paid membership.

8.4 The Chair or Vice-Chair of IAB, and GMG Director and Co-Directors can call for a special IAB meeting if they deem such a meeting is needed

8.5 The University Policy Committee will meet as necessary to discuss and resolve Center program and management issues.

8.6 Center meetings are closed to the public, because of proprietary Center information that will be discussed. Attendance is limited to faculty, staff, and students affiliated with the Center; representatives of Center Members; and the Center Evaluator and other NSF personnel.

ARTICLE IX- RESEARCH PROJECT SELECTION PROCEDURE

9.1 The CENTER research projects will be executed by students, researchers, and faculty and supported by collective membership contributions.

9.2 All Center Members (Members) paying membership contributions in cash may participate in the selection and evaluation of research projects. Individual organizations may acquire multiple Center memberships, and therefore will have a corresponding number of voting representatives on the IAB.

9.3 A portfolio of research topics relevant to the Members will be compiled annually based on the interests of the Members. These research topics will be posted on the Center web site (restricted) and will form the basis for cooperative discussions among the faculty and the industrial members.

9.4 The CENTER faculty will develop a set of project proposals consistent with the goals of their group, the interest of the Members, and the mission of the Center. The proposals will be posted on the Center web site prior to the IAB meeting.

9.5 At the semiannual research review meetings, faculty/student teams will discuss their proposals with IAB members and adjust the scope if appropriate.

9.6 The IAB will vote on the proposed projects as described in Article XIII, thereby indicating their interest in the projects and providing a funding recommendation to the Center Executive Committee (composed of the Chair and Vice Chair of IAB) and Faculty Steering Committee (composed of Center Director and co-Directors).

9.7 The funding decisions are then finalized jointly by the Executive and Faculty Steering Committees.

9.8 Each project will be funded for one year at a time and can be renewed multiple times in equal competition with any newly proposed projects.

ARTICLE X- PUBLICITY

10.1 A Member shall not use the name of the California Institute of Technology in any publicity, advertising or news release without the prior written approval of an authorized representative of the Institute. Likewise, the California Institute of Technology may not use the name of a member in any publicity without the prior written approval of the Member. Press releases will be coordinated between the Center Director and participating university press office. Notwithstanding the forgoing, the parties may satisfy any reporting requirements of their respective organizations.

10.2 Subject to the recommendations of the IAB, the Center Director shall post the descriptions of all CENTER research projects on the Center web site. The descriptions shall not contain confidential or proprietary information and may be published freely.

ARTICLE XI- PUBLICATIONS

11.1 Researchers engaged in CENTER research may disclose the methods and results of their research after a review by the Members for proprietary materials as outlined below.

11.2 At any time, the Director may submit an intent to publish Center information presented in summaries, semiannual reports, annual reports, or final reports; or arising out of or resulting from research projects; in the form of abstracts, presentations, or manuscripts. To inform members of the intent to release information, the Site Director shall submit a "Review of Information for Release" form containing the information to be published in the form in which publication will be sought to the Members. The Review form will be sent by email to the primary contact for each Member with read receipt requested and posted to the Center website. It shall be incumbent upon the Site Director to obtain documented

evidence that the primary contact for each member company has received the proposed release for review and comment by the Member. The information in the proposed release may be published in a substantial form (as submitted with the release form) if within fifteen (15) days after obtaining evidence that all Members have received the Release form, and no Member has identified in writing if the publication contains patentable subject matter that requires protection and/or the publication contains Member's confidential information. In such cases, publication will be delayed up to sixty (60) days to allow for patent applications to be filed or confidential information to be removed. It is understood that in no case can this provision for delay of publication cause an unreasonable delay in the normal academic progress of a graduate student of participating University with respect to preparation and submission of a graduate thesis or dissertation.

11.3 CENTER and Member (s) may provide each other with certain information that is confidential or proprietary in nature (Confidential Information) if necessary to the performance of the research efforts. CENTER or Member (s) may refuse to receive such Confidential Information. Should a party choose to receive Confidential Information, then the receiving party shall receive and hold it in confidence and agrees to use its reasonable efforts to prevent disclosure to third parties. Any information considered by disclosing party to be confidential will be clearly marked by disclosing party in writing, as "Confidential." Orally disclosed Confidential Information shall be reduced to writing by the disclosing party within thirty (30) days of disclosure. The receiving party may not further disclose Confidential Information for a period of three (3) years from the date of disclosure, without permission from the disclosing party, except as necessary for the performance of the Center research.

Confidential Information shall exclude information which:

(a) is now public knowledge or subsequently becomes such through no breach of the Membership Agreement or Bylaws;

(b) is rightfully in the receiving party's possession prior to the disclosing party's disclosure as shown by written records;

(c) is disclosed to the receiving party by an independent third party who, to the best of the receiving party's knowledge, is not under an obligation of confidentiality for such information to the disclosing party;

(d) is required to be disclosed by law or by judicial or governmental requirement;
or

(e) is independently developed by or for the receiving party without benefit of Confidential Information received from the disclosing party as shown by written records.

ARTICLE XII- BENEFITS

To the extent consistent with California Institute of Technology policies and practices Full members will have the following:

12.1 All Full Members will have non-exclusive rights to the entire CENTER research portfolio under the conditions outlined in the Membership Agreement.

12.2 All Members will have an opportunity to directly contribute to CENTER research and education programs by serving as industrial mentors and/or thesis committee members as appropriate and consistent with the policies and procedures of participating Universities.

12.3 All Members will have an opportunity to propose case study problems, specific research problems, and focus areas for research.

12.4 All Members will have an opportunity to host postdoctoral research associates, graduate and undergraduate students as industrial interns.

12.5 Technology transfer between the faculty/student research teams and Members will be promoted by: pre-doctoral and post-doctoral industrial internships; the direct involvement of the industrial advisor on the research team; and web-based submission of reports.

12.6 Each Member that joins the Center as a Full Member by paying a cash membership contribution will vote on the selection of research projects supported by membership contributions. They will also be eligible to vote on all other Center matters and participate in the evaluation and discussion of research projects. Voting procedure is outlined below.

ARTICLE XIII- VOTING PROCEDURE

13.1 Voting on CENTER project selection will be based on membership contributions (cash contributions only). A Member will get 1 vote for every \$1K of annual membership contribution paid, e.g. \$50K annual membership contribution is equivalent to 50 votes that a Member can cast as it best fits its interests; all of its 50 votes for one project, or distribute them over several projects.

13.2 If a Member has elected to support the Center with two or more membership contributions, the number of votes will be capped at two.

13.3 Voting on any issues related to CENTER, other than project selection (e.g. policies and operations), will be based on one vote per Member.

13.4 Each Member that joins the Center on an approved “In-Kind” can participate in the evaluation and discussion of research projects.

ARTICLE XIV- NEW UNIVERSITY AFFILIATES AND INDUSTRIAL MEMBERS

14.1 New universities may request membership into the CENTER as an affiliated site. Each new university requesting membership shall initially obtain concurrence from the Center Director, Site Directors, and the I/UCRC Program Manager at the National Science Foundation prior to submitting a “Letter of Intent” to join the CENTER. Universities requesting membership as an affiliated site must demonstrate their ability to perform synergistic research within the focused research areas of the Center and their willingness to work within the structure, policies and procedures of the CENTER. Upon concurrence by the Center, the new university requesting membership as an affiliated site may continue application per the applicable procedures of the current National Science Foundation I/UCRC program solicitation.

14.2 New Companies, Corporations, or Organizations may request, or be requested, to join a university affiliated site of CENTER as a member. These new Companies, Corporations, or Organizations may join CENTER upon signature of the existing consortium Membership Agreement, acceptance of the current Bylaws, and payment of the NON-PRORATED annual membership contributions. Application of these new membership contributions shall be made to existing research programs at the affiliated site unless a new “interim” research program is otherwise approved by the Center Director, co-Directors, and the Chairman of the IAB. Continued funding of the “interim” research program is subject to IAB approval at the next annual IAB meeting under the terms of these Bylaws.

ARTICLE XV- BROADER IMPACTS

15.1 The Center Director and co-Directors will develop an Outreach and Broader Impacts Plan to ensure that CENTER maximizes its impact on academia, relevant industry, and society. In part, the models, methodologies, and tools developed with support from the Center will eventually become part of the public domain through research publications and presentations, benefitting a wide range of companies beyond Center membership, and society as a whole.

15.2 The Center Director and co-Directors will develop a plan for broadening participation of underrepresented groups in science and engineering by engaging them in Center projects.