



# EarthCube Charter

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1	Preamble	1
2	Mission and Vision	2
3	EarthCube Members and Partners	2
4	Governance Structure and Organizational Units	3
4.1	Leadership Council	3
4.1.1	Leadership Council Functions	4
4.1.2	Leadership Council Membership	4
4.1.3	Leadership Council Chair	5
4.1.4	Leadership Council Elections and Terms	5
4.1.5	Leadership Council Resignation and Unscheduled Departure from Elected Office	6
4.2	Committees	7
4.2.1	Nominations Committee	7
4.2.2	Science and Engagement Team	8
4.2.3	Technology and Architecture Committee	9
4.2.4	Council of Data Facilities	11
4.3	Special Interest and Working Groups	12
5	The EarthCube Office	12
6	Evaluation	13
7	Conflict Resolution	14

## 1 Preamble

The EarthCube Charter (hereafter the Charter) embraces the leadership, strategic direction, operations, and all other formalized activities of EarthCube, and defines the structure of EarthCube's Governance.

The Charter is a living document; suggestions for changes to the Charter may be made by any registered EarthCube member (§3), subject to the proposed changes being approved by a Leadership Council vote. The Leadership Council will consider changes to the Charter at any of its meetings only after four weeks' notice of any change has been given to and comments have been received from the community. A two-thirds majority of all Leadership Council voting members is required to approve changes to the Charter.

Maintaining openness and transparency, and promoting inclusivity in all decision-making



processes are core commitments of EarthCube. In presenting the Charter as an open living document, the intent is to ensure that the community understands how each individual can actively participate in EarthCube governance.

EarthCube was initiated by the National Science Foundation; jointly funded by the Directorate for Geosciences and the Division of Advanced Cyberinfrastructure. Envisioned as an evolving, dynamic community effort, EarthCube is not only a new way for the National Science Foundation to partner with the scientific community, but also a challenge for the many academic, Foundation, and industry stakeholders in the geosciences, geoinformatics, cyberinfrastructure, computer sciences and social sciences to create new capabilities for sharing data and knowledge and conducting research.

## **2 Mission and Vision**

EarthCube's mission is to enable geoscientists to better understand and predict the complex and evolving Earth by fostering a community-governed, common cyberinfrastructure to collect, access, analyze, share, and visualize all forms of data and resources, using advanced technological and computational capabilities. EarthCube's long-term vision is a community-driven, dynamic cyberinfrastructure that supports standards for interoperability, infuses advanced technologies to improve and facilitate interdisciplinary research, and helps educate scientists in the emerging practices of digital scholarship, data and software stewardship, and open science.

The text of the mission and vision statements is maintained at the following persistent URL:  
<http://earthcube.org/document/2015/mission-vision>

## **3 EarthCube Members and Partners**

Individual membership in EarthCube is free, voluntary, and open to all. Membership is achieved via registration at the EarthCube website. EarthCube members constitute what is referred to as the EarthCube Community (capitalized), which is a subset of the broader relevant geoscience and cyberinfrastructure communities. EarthCube members are encouraged to be active and engaged by participating in Standing Committee and Team activities, and expected to adhere to the membership policies specified in their individual Charters.

Registration via the EarthCube website is not a prerequisite for participation in any EarthCube activity or accessing resources. However, registered members have rights and responsibilities that include:

- Voting on matters presented to the EarthCube Community
- Nominating individuals or volunteering to stand for elected office in any core organizational unit
- Volunteering to form or chair special interest and working groups



- Proposing changes to the EarthCube Charter
- Contributing to forums, online discussions, and other publicly accessible areas of the EarthCube website
- Offering suggestions for sessions or speakers at the annual All Hands Meeting
- Receiving support as appropriate for EarthCube activities from the EarthCube Office

EarthCube partner organizations include, but are not limited to, organizations engaged in activities that complement or benefit the EarthCube’s mission. Partners are approved by EarthCube’s Leadership Council, at the recommendation of the EarthCube Committees. Partnership may be formal or informal, with mutually agreeable terms that relate to a specific activity or task, or to a designated period of time.

## **4 Governance Structure and Organizational Units**

EarthCube governance will be implemented through four Standing Committees. The Standing Committees are: Leadership Council; Science and Engagement Team; Technology and Architecture Committee; and Council of Data Facilities.

Mindful of the requirements that the Leadership Council sets the strategic direction for EarthCube and coordinates activities that promote communication, collaboration, and engagement, the Council for Data Facilities and the Standing Committees function independently to shape EarthCube’s vision and fulfill its mission, and are guided by their own Charters that define their functions and the scope of their internal operations. Depending on need, the functions and operations of EarthCube’s Standing Committees may be facilitated through the formation of Special Interest and Working Groups, and are supported by the EarthCube Office.

Underlying this Charter are a number of key assumptions, including:

- An integrated and effective cyberinfrastructure for the geosciences is both a technical and social accomplishment
- Although EarthCube was initiated by the National Science Foundation (NSF) and operates in coordination with the NSF (with NSF funding for operations and projects), EarthCube also has the capacity to coordinate with other public and private organizations in order to best advance the mission
- There will be a continuing need to balance inclusive deliberations with decisive action, with this Charter designed to ensure the necessary checks and balances

### **4.1 Leadership Council**

The Leadership Council is the elected voice of the EarthCube Community, setting the strategic direction for EarthCube and making decisions critical to the success of EarthCube. The Leadership Council will conduct its business at the EarthCube Annual Meeting, other face-to-face meetings, and a minimum of one virtual meeting in each of the remaining ten calendar months. It is anticipated that most Leadership Council decisions will be achieved



through dialogue and consensus. Except where otherwise specified, if a vote is called, a two-thirds majority of all Leadership Council voting members is required to approve the measure.

#### **4.1.1 Leadership Council Functions**

The Leadership Council is the starting point for ensuring continuity throughout EarthCube's governance structure, and will fulfill the following functions:

- Serve as a leading source of scientific, technical and intellectual guidance for EarthCube
- Act as a leading point of communication for coordinating with, reporting and making recommendations to the National Science Foundation and other funding agencies on behalf of EarthCube
- Define, implement and revisit, as required, the scope and strategic direction of EarthCube
- Identify and implement monitoring metrics to assess progress towards EarthCube goals
- Establish, maintain, and ensure consistency, transparency and community participation in all policy-making procedures and decision-making processes
- Communicate outcomes to the EarthCube Community
- Form and work with others to form and coordinate Standing Committees and Working Groups as needed to perform critical functions
- Enable communication among the core governance organizational units to close gaps, eliminate duplication, and build synergies
- Foster business models to sustain and maintain the infrastructure of EarthCube
- Provide for appropriate dispute resolution and proactive management of risk and conflicts of interest

The EarthCube Leadership Council does not replace or duplicate the roles of the Principal Investigators on individual EarthCube funded projects, nor that of the EarthCube Office in executing the Office collaborative agreement.

#### **4.1.2 Leadership Council Membership**

Mindful of the potential for either expansion or contraction as circumstances dictate, the nucleus of the Leadership Council comprises ten elected, voting members: the Chair; one representative each from the Council for Data Facilities, the Technology and Architecture Committee and two representatives from Science and Engagement Team; and four at-large members, one of which is an early career representative (up to 5 years beyond their most recent degree) to encompass the constituencies of the National Science Foundation Directorate for Geosciences. The EarthCube Office Principal Investigator, or their designated representative, serves as a non-voting member of the Leadership Council, as does the newly-elected Leadership Council Chair. The preceding Chair and a representative from the National Science Foundation may also participate as non-voting members of the Leadership Council.



### **4.1.3 Leadership Council Chair**

The Chair is the executive presence representing EarthCube's interests as a community-led organization. He or she mobilizes the community, champions EarthCube's portfolio of integrated activities to all constituencies and parties, and advances EarthCube's vision, mission, and strategic plan through open and inclusive governance. The Leadership Council will select from among its members a Deputy Chair who works with the Leadership Council Chair and the EarthCube Office Principal Investigator in advancing the work of the Leadership Council. The Deputy Chair is also the point of contact in step two of the conflict resolution procedure.

The Office will, in consultation with the National Science Foundation, administer an appropriate annual honorarium, beyond travel support, for the Leadership Council Chair.

### **4.1.4 Leadership Council Elections and Terms**

The goal is to run Leadership Council, Standing Committees chair elections once a year, in the late Fall, with a second annual election if needed (because of early resignations) in late Spring. It is also a goal to have staggered Leadership Council terms to minimize the chance of significant membership turnover all at one time. Depending upon the time of election, appointment to the Leadership Council may start immediately, or be postponed for up to 6 months, at the discretion of the Leadership Council Chair and EarthCube Office Principal Investigator.

Any person showing a demonstrated commitment to EarthCube's vision may be nominated to serve as Chair of the Leadership Council. The nominees will be asked by the Nominations Committee to submit an NSF-style biographical sketch (two pages, covering professional preparation, selected appointments, selected publications, synergistic activities, collaborations, and other affiliations) and a statement of interest (approximately 250 words). In consultation with the NSF, nominees will be reviewed by the Nominations Committee for conflicts of interest and appropriate diversity across fields and disciplines before being presented to the EarthCube community for election.

The Chair of the Leadership Council is voted into office by the EarthCube Community and serves for two years with the opportunity for re-election for one additional consecutive term. If the newly-elected Chair does not start immediately, they may participate in Leadership Council meetings as a non-voting member. For the six months after leaving office, the outgoing Chair may also participate in Leadership Council meetings as a non-voting member.

Elected Leadership Council members will normally serve for two years, with one opportunity for reelection for a consecutive term. A serving Leadership Council member may at any time choose to stand for election as Leadership Council Chair. To preclude dominance by any one faction and to preserve continuity, elections for the representatives from one Standing Committee, one Team, and two at-large members will be held one year, and elections for representatives to the other Standing Committee, and two at-large members will be held in the



alternate year.

#### 4.1.5 Leadership Council Resignation and Unscheduled Departure from Elected Office

Leadership Council members and Standing Committee Chairs and Co-Chairs may resign from office at any time, by giving written notice to the Nominations Committee and EarthCube Office Principal Investigator.

Except for the Chair, any two voting Leadership Council members, may through a communication in writing to the EarthCube Office Principal Investigator, move for a vote of no confidence in another voting Leadership Council member. The serious nature of this action requires that its origin(s) be clearly, concisely, and rationally explained. In the event that the matter(s) in question cannot be resolved through dialogue, and a motion of no confidence in any voting member of the Leadership Council becomes an agenda item for discussion, and is duly seconded, the member may be removed from office by an affirmative vote cast by two-thirds of the remaining voting members of the Leadership Council. All Leadership Council members will be given a minimum of five working days' notice of the upcoming agenda item, and given the opportunity to cast their vote *in absentia*. Votes of no confidence will be anonymous.

In the event that the person elected to the position of Chair resigns or becomes, for any reason, unable to perform or discharge the duties of their office, the Leadership Council either will instruct that a new election be held or ask the Nominations Committee to appoint, within 20 working days, a Leadership Council member as *locum tenens* for the remainder of the Chair's term of office. The former option is preferred but not mandated. During the time that there is not a Chair, the Deputy Chair of the Leadership Council will assume these duties in a way that provides continuity for EarthCube.

It is important to ensure that EarthCube Leadership Council (LC) members remain committed and engaged within the positions they hold, in order to promote effective functioning and efficient communication of EC governance. The LC members must attend meetings to maintain governance continuity, to be fully informed about the issues on which they will vote, and to meet their responsibility to contribute to the decisions they are required to make.

If an LC member will be absent from all or part of any meeting, the LC member is expected to contact the LC Chairperson as soon as the need to be absent is known. If an LC member is absent from four consecutive LC meetings or misses half or more of the meetings in a 6-month period without a valid reason, after consultation with the affected member, the LC Chair may ask the LC to consider removing the person from membership on the LC. Once motioned by the Chair and seconded by another member of the LC, the member shall be removed upon an affirmative vote by two-thirds of the remaining LC membership. This action will necessitate an out-of-cycle election for the position previously held by the removed member.



## 4.2 Nominations Committee and Standing Committees

EarthCube's Standing Committees, and the Council of Data Facilities are governed by individual Charters that delineate specific responsibilities, operations, and functions. The Leadership Council may, as required, dissolve, amalgamate or create Standing Committees, in consultation with the EarthCube Office, based on the principles of:

- Open membership based on volunteer effort, as defined in the Standing Committee's charter (with efforts made to foster inclusivity and diversity, including, for example, representation of minorities; early-career scientists; and participation across all of the constituencies of the National Science Foundation Directorate for Geosciences)
- Elected leadership as defined by the Standing Committee's charter
- Coordinating with the Leadership Council, and the other elements of EarthCube's governance structure, to advance EarthCube's goals, fulfill its mission and help formulate strategic priorities
- Creating explicit mechanisms for coordination amongst EarthCube's Standing Committees including, but not limited to, forming joint working groups, appointing individuals to act as liaisons, and planning joint workshops or other events
- Forming Working Groups to address issues, opportunities, activities, and deliverables to advance EarthCube goals

### 4.2.1 Nominations Committee

The Nominations Committee does not select leaders, but helps identify and evaluate candidates for elected office. The mission of the Nominations Committee is to assure a fair, inclusive, and expeditious process for identifying candidates for all EarthCube's elected offices (i.e., the Leadership Council Chair, Leadership Council Members, Standing Committee Chairs, and Team Chairs).

The Nominations Committee will have these members: three at-large members elected by the community, who will each serve for two years, plus the EarthCube Office Principal Investigator or their designated representative as a non-voting liaison. Terms are staggered to allow for knowledge continuity on the committee. One member is elected each first year, and two in the second. The at-large members of the Nominations Committee may not stand for or seek elected office in EarthCube's governance structure while they are members of the committee.

A Standing Committee or Team may, on an annual basis, either ask for or receive suggestions for a Chair from the Nominations Committee, as will the Leadership Council for At-Large members and, in alternate years, with regard to its Chair. The Nominations Committee has sole responsibility for assembling the slate of candidates for at-large positions on the Leadership Council. To preclude dominance by any one faction and to preserve continuity, elections for approximately half of the representatives to the Leadership Council will be held every year.





The EarthCube Office will make an open call for nominations from the community for each elected office at least 30 days before the election. Self-nominations and expressions of interest, supported by the candidate and a member of the EarthCube community, will be accepted prior to the election. Candidate suggestions for the committee must be submitted at least 15 days before an election. The nominees will be asked by the Nominations Committee to submit an NSF-style biographical sketch (two pages, covering professional preparation, selected appointments, selected publications, synergistic activities, collaborations, and other affiliations) and a statement of interest (approximately 250 words).

The Nominations Committee will, early in the nominating process, ensure there are at least two candidates for each elected position to be filled and will generally slate all candidates that have been nominated for vote by the community. Candidates for elected office should have a demonstrated commitment to EarthCube's mission, which should be reflected in their statement of interest and can also be indicated in other ways. The Nominations Committee is encouraged to identify qualified early career candidates. For many elections, candidates are not required to be existing members of the EarthCube Community, but are required to join if successfully elected. Additionally, the Nominations Committee will, in consultation with the National Science Foundation (NSF): ensure that there is appropriately diverse representation across the geoscience fields and disciplines and cyberinfrastructure expertise; verify that the mission of the NSF is not at risk due to any aspect of the leadership selection; and determine that there are no actual or potential conflicts of interest with any nominated or self-selected candidate for an elected position that would disqualify that individual's candidacy. The intent, with respect to the NSF's role in the nomination process, is to preserve the concept of community governance, while simultaneously averting the possibility that the interests of the Foundation are compromised by the composition of the Leadership Council. The final decision on candidate selection will rest with the NSF.

The Nominations Committee has a page on the EarthCube.org website that further details their role and includes a link to a welcome letter for new members.

#### **4.2.2 Science and Engagement Team**

The Science and Engagement Team (SET) is charged with maintaining a connection between the academic geoscience and technology communities in EarthCube, facilitating engagement among the EarthCube community and individual geoscientists, as well as, linking the activities of the wider-EarthCube effort to relevant organizations and initiatives.

The mission of the EarthCube Science and Engagement Team is to engage with scientists and relevant organizations and to facilitate community-led advances in methodology and outcomes of geoscience research using digital tools and resources. The team proactively reaches out to the EarthCube community and beyond to encourage involvement in EarthCube and the utilization of the EarthCube cyberinfrastructure. The team ensures that end-user geoscientist needs, requirements, and aspirations are identified and prioritized. It also collaborates with existing





cyber-initiatives, agencies, associations, and other efforts external to the NSF core constituency to achieve this mission.

The goal of the Science and Engagement Team is to serve the working geoscience community by:

- Sharing information about EarthCube resources (data, workflows, software, etc.).
- Ensuring an explicit connection exists between the community's science goals and technical function by identifying and promoting workflows (the series of activities necessary to realize a specific science goal).
- Encouraging, engaging, and enabling future generations of geoscientists.
- Engaging and supporting end-users, including attracting new users to EarthCube.
- Supporting open science through the promotion of easy-to-adopt standards, tools, and cyberinfrastructure that can be exploited throughout the entire research lifecycle.
- Enabling broad communication of EarthCube information to community individuals across academia, the private sector, and government to facilitate community discussion.
- Facilitating Standing Committee and Working Group engagement and collaboration with external organizations and initiatives.
- Reaching out to potential collaborators to establish partnerships, affiliations, and connections to external organizations and initiatives through formal and informal relationships.
- Helping to identify use-cases that may be used to evaluate cyberinfrastructure components.
- Deliberating and advising the LC on future directions for EC, including its form of existence beyond the conclusion of NSF funding for the present structure.

The Science and Engagement Team Charter is maintained at the following persistent URL: *<To Be Determined>*

#### **4.2.3 Technology and Architecture Committee**

The standing Technology and Architecture Committee is charged with facilitating the development of the technology that is part of EarthCube.

The mission of the standing Technology and Architecture Committee is to oversee the technology and architecture development of EarthCube to assure that EarthCube infrastructure is community-driven, supports standards for interoperability, and incorporates advanced technologies to become a commonly used capability that supports scientists on their research



efforts.

The goal of the standing Technology and Architecture Committee is to facilitate the continuing development of the technology component of EarthCube by:

- Providing stewardship of the architecture concepts and specification documents
- Stewardship includes providing access to documents and change management for those documents
- Provide a forum for synthesis of conceptual design and architectural approaches for EarthCube
- Ensuring coordination between technology development and scientific requirements
- Ensuring the explicit connection between the scientific process and technical function
- Coordinating testbed processes and other mechanisms for development and validation of cyberinfrastructure components for utility in science use cases
- Facilitating alignment of EarthCube funded projects to foster technology integration
- Providing recommendations for accommodation and incorporation of different standards in EarthCube
- Identifying gaps in coverage of needed cyberinfrastructure capabilities, and determining recommendations on how to fill them
- Developing recommendations for monitoring and assessing performance of EarthCube infrastructure in coordination with other EarthCube groups
- Monitoring technical requirements with the goal to ensure EarthCube is meeting end user needs
- Working with other EarthCube Governance organizations as an emissary between software developers, the science community, and infrastructure, as well as educators
- Supporting other activities as deemed relevant by the Technology and Architecture Committee

The Technology and Architecture Committee Charter is maintained at the following persistent URL: <http://earthcube.org/document/2015/tac-charter>

#### **4.2.4 Council of Data Facilities**

The Council for Data Facilities is a federation of existing and emerging geoscience data facilities that serve as a foundation for EarthCube and related aspects of the cyberinfrastructure for earth system science.

The mission of the Council of Data Facilities is to serve in a coordinating and facilitating role that includes advancing the following responsibilities and goals:

- Providing a collective voice on behalf of the member data facilities to the NSF and other foundations and associations, as appropriate
- Identifying, endorsing, and promoting standards and best or exemplary practices in the organization and operation of a data facility



- Collaborating with standard-setting bodies with respect to shared feedback on standards for data, models, software sharing interoperability, metadata, and related matters
- Identifying opportunities for and supporting the development and utilization of shared cyberinfrastructure, professional staff development and training, and other related activities
- Fostering innovation through collaborative and interdisciplinary projects
- Increasing understanding and engagement with relevant stakeholders

In advancing this mission, the Council of Data Facilities is committed to working with relevant agencies, professional associations, initiatives, and other complementary efforts. The Council of Data Facilities is committed to interact constructively with all aspects of EarthCube through communication, coordination, and, where appropriate, integration of activities, initiatives, products, and processes.

The Council of Data Facilities Charter is maintained at the following persistent URL: <http://earthcube.org/document/2014/council-data-facilities-founding-charter>

### **4.3 Special Interest and Working Groups**

Any EarthCube member can create a Special Interest Group focused on any topic relevant to EarthCube. There is no formal review or approval process. Inactive Special Interest Groups can be disbanded by the Leadership Council, in consultation with the EarthCube Office.

Working Groups have a formal approval process and serve as ad hoc organizational units created in response to a pressing issue, opportunity, activity, or deliverable related to moving forward EarthCube goals. Working Groups can emerge from the broad EarthCube Community, from under the auspices of a Standing Committee or Team, or by direction of the Leadership Council. They can be initiated by any EarthCube members, provided there is a minimum commitment from at least three participants representing at least three separate institutions. Working Groups may bridge more than one Standing Committee or Team, as they serve as important mechanisms to foster collaboration and resolve issues among Committees.

The formation of Special Interest and Working Groups is governed by guidelines maintained at the following persistent URL: <http://earthcube.org/document/2015/working-group-initiation-form>

## **5 The EarthCube Office**

An ongoing EarthCube Office will operate under a cooperative agreement with the National Science Foundation. Under such an agreement, the Principal Investigator for the EarthCube Office is expected to help ensure constructive communication among the Leadership Council and EarthCube's Standing Committees, the at-large community, and all relevant stakeholders. This includes service as a non-voting member of the Leadership Council and as



a member of the Nominations Committee.

The EarthCube Office is responsible for assisting the Leadership Council, in support of EarthCube's core organizational units; Special Interest and Working Groups; Members and Partners; and funded projects supported by National Science Foundation awards. The Office may exist in a single physical location, comprise a virtually distributed team, or involve any combination of these two elements.

Critical EarthCube Office functions are anticipated to involve, but not be limited to, responsibility for:

- Managing, developing, enhancing and maintaining EarthCube's online presence through the organization's website in accordance with the Leadership Council's requirements and the community's needs
- Implementing and managing technologies that create, index, store and retrieve EarthCube's records, documents, and other information assets
- Providing logistics and performing administrative tasks in support of work being undertaken by the Leadership Council, Standing Committees, Special Interest and Working Groups, and funded projects supported by National Science Foundation awards
- Managing and tracking EarthCube's operational and outgoing expenses;
- Conducting elections
- Supporting public relations, community engagement and outreach, and science education
- Providing support and logistics to the annual All Hands Meeting
- Providing support to all EarthCube workshop organizing committees

These and other functions may be further defined in the EarthCube Office cooperative agreement with the National Science Foundation. To ensure that organizational objectives are being fulfilled, the Leadership Council, in consultation with the Standing Committee Chairs and co-Chairs, may, as appropriate, review and provide constructive feedback on Office performance.

## **6 External Advisory Group**

The EarthCube Advisory Group (EAG) is asked to help guide the development of EarthCube by providing external scientific and high-level technical advice to the Leadership Council. The EAG is specifically asked to provide advice on how EarthCube can continue to enable the study of cross-disciplinary Grand Challenge problems in the geosciences. The advice will be provided to EarthCube Leadership on an ongoing basis through virtual or in-person meetings as agreed to by both the Leadership Council and the EAG. EarthCube Leadership may also request specific feedback from the EAG on other EarthCube-related matters, and the EAG may request feedback from the EarthCube Leadership on scientific, technical, organizational or governance activities.



## 7 Evaluation

Key to EarthCube's success and sustainability is the capacity to adapt to changing community needs, combined with scientific and technological advances. EarthCube's core organizational units must be advancing EarthCube's mission, and EarthCube's vision in ways that are aligned with the needs and capabilities of the geoscience and cyberinfrastructure communities. Towards this goal, three forms of evaluation are considered.

First, rather than the traditional formative and summative evaluations of the EarthCube office, an ongoing developmental evaluation will be employed to provide feedback on operations and governance. Where appropriate this first form of evaluation will include developmental facilitation. Both process and outcome metrics will be assessed. A second form of evaluation is externally oriented, centered on assessing the alignment of geoscience fields and disciplines, cyberinfrastructure domains of expertise, and other key stakeholders relevant to the initiative. Also employing the developmental approach, the aim of this aspect of the evaluation is broader situational awareness for the initiative. Where appropriate this second form of evaluation will include developmental facilitation. A third form of evaluation involves NSF-initiated program reviews, which are subject to the policies and procedures governing such reviews.

Data generated during these evaluation processes will be made public, with due attention given to standards of confidentiality and with proper treatment of sensitive information. All three forms of evaluation may include, but are not limited to: the collection and analysis of survey data; monitoring website events; tracking use and extracting trends; compiling membership demographics; tracking membership participation in EarthCube events and the presence of EarthCube members at professional meetings and conferences; and identifying the impact of EarthCube activities, including advances in the geosciences and cyberinfrastructure that have been enabled through EarthCube.

## 8 Conflict Resolution

Conflicts arising under this charter should be resolved in a timely, constructive manner. Towards that end, a two-step process is established.

Step one of the process involves problem-solving dialogue and resolution just between or among the disputing parties. It is recommended that in such a discussion the parties first ensure that they define the issue, discuss the interests or concerns of all involved, and generate multiple options for consideration. It is often the case that resolution is facilitated when there is a well-defined issue, a full listing of interests, and the identification of multiple options before any party advocates for any particular resolution. No written record is needed for issues arising and resolved at step one of this process, but a record of the issue, interests, and options will be needed for appeal to step two.

Step two is an appeal by any involved party not satisfied with the resolution at step one. This involves a formal indication of a dispute to the Deputy Chair of the Leadership Council, who



then is charged with documenting the issue, the parties involved, and their report on the interests and options identified in step one. If there is not a clear record of the issue, the interests and the options, the parties may be asked to generate this before advancing further in the process – since this becomes the formal record of the issue. In step two, the Deputy Chair of the Leadership Council, in consultation with the Chair and the Principle Investigator where appropriate, will identify a third-party knowledgeable about EarthCube and appropriate to serve as a facilitator or mediator working with the parties.

If resolution cannot be reached in Step two, any involved party can appeal to the relevant body charged with a final and binding decision. In some cases, this will be the Leadership Council. In other cases, this will be the National Science Foundation. In some cases, it may be the courts or other administrative agencies. The aim, however, is to maximize the capacity to resolve issues at step one – in a timely manner among the parties directly involved – with additional avenues of appeal available.