

EPA Geospatial Quality Council Strategic and Implementation Plan

2010 to 2015

RESEARCH AND DEVELOPMENT

EPA Geospatial Quality Council Strategic and Implementation Plan

2010 to 2015

Primary Author

George Brilis

Environmental Protection Agency
Office of Research and Development

Editing Authors

Lynne Petterson, EPA/ORD

Tyrone R. Smith, San Bernardino County, CA

Rollin Strohman, Cal Poly, CA

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EPA Geospatial Quality Council
U.S. Environmental Protection Agency
Las Vegas, NV 89193-3478

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Reviewers

Name	Organization
Itkin, Cheryl	EPA/ORD
Kirby, Kevin	EPA/OEI
Kohl, Noel	EPA/R5 (retired)
Parrish, David	EPA/R6
Sibert, Christopher	EPA/ORD
Weingart-Webb, Denise	Independent Collaborator
Worthington, Jeffrey	EPA/OEI

Notice

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Contents

Background	1
Business Concerns	1
Mission	2
Strategic Vision	2
Goals	2
Governance	3
General Practices and Logistics	3
Organizational Structure	3
Roles and Responsibilities	3
GQC Chairperson	4
Ad hoc committee Lead	4
Ad hoc committee Co-Lead	4
Ad hoc committee Members	5
Customer Service	5
Office of Environmental Justice (OEJ)	5
Regional Offices	5
Office of Environmental Information (OEI)	5
Office of Research and Development (ORD)	6
National Program Offices (NPO)	6
State Partners	6
County and City Partners	6
Private Sector	6
Implementation	6
Education	7
Documentation	7
Consultation	7
Cooperation	7
Approach	7
Project or Product selection	7
“First Draft”	8
Team Formation	8

Contents (Continued)

Product Review	8
Finalization.....	8
Publication	8
Distribution	8
Accomplishments	9
Education	9
Documentation	9
Consultation	9
Cooperation	9
Future Direction	9
Short-Term	9
Long-Term	10

Appendices

Appendix A List of GQC Consultants (February 2010)	11
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Background and Introduction

The EPA Geospatial Quality Council (GQC) was created to promote and provide Quality Assurance guidance for the development, use, and products of geospatial science. The GQC was created when the gap between the EPA Quality Assurance (QA) and Geospatial communities was recognized. All EPA Offices and Regions were invited to participate. Currently, the GQC consists of members from the EPA, the Department of Defense, the Department of Energy, the U.S. Geological Survey, and States, local governments, the private sector and the public sector.

The GQC was first established by the Environmental Sciences Division (ESD) of ORD's National Exposure Research Laboratory (NERL), as the "EPA GIS Quality Council." As membership and purview grew, the organization evolved into the "EPA Geospatial Quality Council." Even though the GQC is operated from within the EPA Office of Research and Development, it is not organizationally dependent on any EPA Region or Program Office. This allows the GQC to maintain the critical perspectives of any quality-related organization – independence and objectivity.

The GQC Strategic and Implementation Plan defines the mission and articulates the strategic vision. This plan identifies the short and long-term goals, objectives, and activities necessary to accomplish the mission. As the GQC continues its efforts, this Strategic and Implementation Plan may change to adapt to new technology and changing requirements. An organizational list of collaborators is provided in Appendix A. All existing and new GQC Collaborators have been notified, understand and agree that the only compensation for their efforts shall be solely a notation of their contribution as author, co-author, editor, or reviewing. Since they are not extrinsically compensated, collaborators reserve the right to limit their contribution of time and effort.

When possible and applicable, the GQC attempts to harmonize the approaches used in geospatial science. At times, this includes incorporating various federal, state, and local government approaches to EPA Geospatial-QA.

In particular, the GQC works to facilitate the implementation of, and where possible enhance, the Federal Geographic Data Committee's (FGDC) quality-related efforts to bring the goals of a National Geospatial Data Structure to fruition. Where possible, advances from institutions of higher learning are incorporated into GQCs' efforts. Feedback is also sought from the public and private companies regarding quality and customer service and the resultant suggestions and information are communicated to the appropriate EPA organization for investigation, implementation or corrective action.

Business Concerns

As a grass-roots organization, the EPA Geospatial Quality Council relies on collaborators who share a common vision to improve the quality-related aspects of geospatial science in a cross-organizational, multi-disciplined environment. All the achievements have been accomplished through the selfless, non-compensatory efforts of its collaborators.

All collaborators understand and agree that compensation for their efforts has been, and shall be the intrinsic reward of contributing to the betterment of the whole. In addition, collaborators may be recognized for their contribution as author, co-author, editor, and/or reviewer. Further, when merited, and

if possible and applicable, EPA awards may be presented to communicate the importance of a product and to recognize the efforts of individuals and teams.

Future resource needs may be requested in the form resources to be used for the planning and implementation of a National Geospatial Quality Conference. In addition, travel resources may be required so that *ad hoc* teams and committees may meet and more quickly realize and bring to fruition stated objectives. Details of future resource needs may be presented in a separate document – the form of which may be a request for funding from either EPA ORD and/or the EPA OEI. In addition, interagency memorandums of understanding will be investigated.

Mission

The mission of the EPA Geospatial Quality Council is to provide Quality Assurance guidance for the development, use, and products and services of geospatial activities and research and to do so in an administratively efficient manner.

Strategic Vision

The strategic vision of the GQC incorporates administrative efficiency toward accomplishing its mission. This Strategic plan provides a road map for achieving this vision. The vision of the GQC is to:

- Enhance decision making and accessibility processes by ensuring that geospatial information is of known quality.
- Provide EPA with an “independent” quality-oriented body of professionals to provide opinions and conduct quality evaluations.

The GQC focuses on goals and activities that will:

1. Allow EPA and its constituents to make full use of consistent, high-quality geospatial data as an integral part of the decision-making process;
2. Provide open access and exchange of Geospatial-QA approaches between the Agency, States, other federal agencies, local government, and the public to empower greater participation in decisions affecting environmental management.

Goals

The goals and activities defined by the GQC are important to achieving the vision, and they form the basis for ongoing efforts within EPA Geospatial programs. The strategic goals are critical to the success of this plan and receive the concerted effort of the GQC at national and interagency levels. The goals are to:

1. Promote a broader understanding of the value and benefits of quality assurance in the geospatial community,
2. Facilitate and promote cross-organizational cooperation and dialogue on geospatial quality issues,
3. Develop, test, and evaluate Geospatial-QA concepts, procedures, guidance materials, and tools.

Governance

General Practices and Logistics

The GQC uses a consensus building approach for addressing issues that arise in the geospatial community. The GQC may provide input but will not attempt to resolve program office internal procedural and policy issues. Decisions made by the GQC will not supersede established program policies and regulations for geospatial activities unless revisions to such policies and regulations make sense based on GQC developments in process, security and technology.

Each GQC member has an equal stake and therefore equal voice in discussions. During brainstorming discussions, creative thinking is encouraged and suppressing the ideas of other members is discouraged.

GQC meetings will be held in accordance with agendas provided in advance, to ensure the efficient use of time within each session. Agenda bullets will be contributed by the members in advance and are subject to change during the meetings.

Comments on deliverables will be provided within a reasonable time frame, usually within two calendar weeks.

Organizational Structure

The GQC exists within the EPA, but operates independent of EPA Regions and Program Offices. In order to effectively communicate and promote Geospatial-QA, the GQC adapted a multi-organizational approach. In addition to maintaining an infrastructure throughout the EPA, the GQC maintains communications with organizations external to the EPA engaged in geospatial-related activities. Through its' Non-EPA members, the GQC maintains awareness of the needs and issues of EPA stakeholders. Though "independent" and "autonomous," the GQC works closely with the EPA Geospatial Information Officer (GIO) and seeks to facilitate the goals of the FGDC.

Roles and Responsibilities

The following describes roles and responsibilities of the GQC members and participants. The goal is to distribute the level of effort across the GQC to minimize burden upon any one individual and ensure that a diverse set of perspectives are included in any deliverable generated by the GQC or its' ad

hoc committees. The GQC expects that each member has obtained permission from their organization to participate.

GQC Chairperson

The GQC Chairperson is responsible for:

- Coordinating and facilitating meeting and activities.
- Coordinating comments and distributing of deliverables to and from the participating offices.
- Obtaining reviews, internal/external as appropriate, of products in preparation for publication.
- Occasionally leading ad hoc tasks such as conducting research, drafting papers and preparing presentations.
- Coordinating the insertion of relevant Agency-wide and federal-wide policies and guidance.
- Advocating GQC principles and activities.
- Putting forth pertinent issues to the membership.
- Direct/initiate education activities.
- Lead/initiate the development of guidance documents.
- Ensuring that EPA Clearance procedures are implemented.
- Develop and revise as required the *EPA Geospatial Quality Council Strategic and Implementation Plan*.

Deputy GQC Chairperson, Secretariat, and other positions

These positions are under development and may be addressed in a later revision.

All members should consider presenting training seminars when possible.

Ad Hoc Committees

Most of the products of the GQC are accomplished through temporary Ad Hoc Committees. It is advisable that each Ad Hoc Committee member have a working knowledge of the issue(s) at hand, and the approval of their organization to participate in a project.

Ad hoc committee Lead

- Coordinating and facilitating meeting and activities.
- Developing contractor statements of work and serving as work assignment manager on contract tasks.
- Coordinating comments and distribution of deliverables to and from the participating offices.
- Occasionally leading ad hoc tasks such as conducting research, drafting papers and preparing presentations.
- Assist the GQC Chairperson in coordinating the insertion of relevant Agency-wide and federal-wide policies and guidance.
- Obtaining reviews, internal/external as appropriate, of products in preparation for publication.

Ad hoc committee Co-Lead

- Acts as Ad Hoc Committee Lead and holds the same responsibilities in the absence of the ad hoc Committee Lead.
- Collaborates with the Ad Hoc Committee Lead to ensure that meeting, comments and deliverables are structured and administratively efficient.

Ad hoc committee Members

- Participate in Ad Hoc Committee meetings and activities.
- Provide expert knowledge from his/her program area or skill-set.
- Occasionally lead ad hoc tasks such as conducting research, drafting papers and preparing presentations.
- Report progress or issues to his/her own management chain.
- Identify and coordinate with the appropriate technical, legal, program personnel in special meetings and activities.
- Write, review and comment on deliverables and coordinate comments within his/her program offices.
- Direct/initiate education activities.

Note: Ad Hoc Committee Members are distinguished from other GQC members. Ad hoc Committee Members may hold additional responsibilities associated with coordination within their offices and representing their offices from a decision-making standpoint.

Customer Service

In the GQC, awareness of customers is constantly evolving. This is an ongoing process that cannot be measured, but, rather, manifests itself in stronger, more productive working relationships. Many of the member organizations are also customers. The customers include, but are not limited to:

US EPA

Regional Offices

Regional Offices are the focal points for implementation of Remote Sensing (RS)/GIS applications to support media program operations, multi-media analysis, Community Based Environmental Protection, Environmental Justice studies, state partners, and risk-based environmental management.

Office of Environmental Information (OEI)

The OEI is designed to be a center of excellence that advocates the use and management of information as a strategic resource to enhance public health and environmental protection. The OEI identifies and implements innovative information technology and information management solutions that strengthen EPA's ability to achieve its goals. The OEI ensures the quality of EPA's information, and the efficiency and reliability of EPA's technology, data collection and exchange efforts, and access services.

Office of Research and Development (ORD)

The ORD provides research in the development of GIS and uses Remote Sensing (RS) and GIS in their work. One example is the EPA Ecosystem Services Research Program (ESRP), which includes RS/GIS as a fundamental role in researching and sharing information on major geospatial efforts.

EPA National Program Offices (NPO)

The EPA NPOs often use geospatial science in their programs, such as the EPA Office of Water, and the Office of Compliance and Enforcement Environmental Enforcement. Information of known quality is critical in applications such as Environmental Justice due to the probability of litigation.

Other Federal Agencies

The EPA shares scientific information with other federal agencies, whether they are not they have a regulatory function. Some federal agencies include: the US Geological Survey, the US Department of Agriculture, and the US Bureau of Reclamation.

State Partners

State agencies that have developed geospatial capabilities over the past few years are included. The EPA frequently provides technical support, pursues joint projects, and shares data with these States.

County and City Partners

Geospatial science and in particular GIS, is a used by many local government activities – typically, Counties take the lead in managing most of these activities, especially emergency response situations. In addition, some counties and cities have adopted GIS as the hub for information management, dissemination and for accounting activities.

Private Sector

The GQC may provide consultation to private profit and non-profit organizations to help interpret and/or clarify EPA policies and procedures as they apply to geospatial activities. If the GQC does not have the expertise to directly answer a specific question, the GQC will direct inquiries to the appropriate organization.

Implementation

The GQC plans to meet its goals through education, documentation, consultation, and cooperation. The GQC submits the products it develops to the appropriate Region or Program Office for approval and distribution.

Education

The GQC will develop courses, present training sessions, workshops and other media. The purpose these efforts will be to educate the Quality Assurance Communities about geospatial science, and conversely educate the Geospatial Communities about Quality Assurance.

Documentation

Because of the growth and use of geospatial data and information, the GQC focuses on developing guidance documents, templates and other tools that focus on the fundamental aspects geospatial science. Guidance documents will be developed to assist geospatial professionals in meeting quality assurance policies, and conversely assist QA Professionals in evaluating geospatial plans and products.

Consultation

The GQC will continue to provide expert QA consultation as technology, customers and requirements change. The GQC will serve as a resource of experts that various EPA and external organizations can consult for their specific needs. The GQC will work with the legal community to ensure compliance with current laws and regulations and anticipated shifts in legal requirements.

Cooperation

The GQC will incorporate federal, state, and local government approaches to Geospatial-QA through conference, communication, and the creation of a larger Geospatial-QA organization. Where possible, advances from Institutions of Higher Learning will be incorporated into GQC guidance documents. Feedback from the public regarding quality in customer service will be sought and the information communicated to the appropriate EPA station for corrective action.

Approach

The following approach has been followed since the initial formation of the GQC precursor organizations. The process assures proper credit to the individual GQC members that play a contributory role. These procedures have been successful and have resulted in the development of numerous products, some of which have become quality-related pillars of EPA geospatial-related policies. Some GQC products have become critical in EPA Geospatial Science projects and products. The approach allows multi-disciplined input and does not disturb individuals that choose not to contribute.

Project or Product selection

In general, the GQC develops products by “going up the ladder” of the Geospatial Information Lifecycle and Sources of Error Flowchart. “Next Projects” or products may evolve from necessity and

may not be directly addressed or reflected in the flowchart. Projects may also be suggested by upper management such as the EPA Geospatial Information Officer, or the EPA Chief Information Officer. For example, the EPA Geospatial Information Officer may request that the GQC participate in a quality evaluation of an EPA geospatial project or product.

“First Draft”

Once a project has been identified and defined, the entire GQC is requested to review the topic and provide feedback. A “first-cut” or very rough draft document is developed and distributed for consideration and discussion at the next conference call. Anyone may develop and submit for consideration a “first-cut” draft document. Any written comments are considered and factored into the document.

Team Formation

Members are solicited via a “Call-for-Participants” email regarding the project. Members are requested to choose a contributory role of “Author” or “Reviewer.” As a result, *ad hoc* teams arise. Members that do not choose to participate in a contributory manner are typically not allowed to view drafts documents. GQC members that are not actively participating in the development or review of a product may only view the product when it is released to the general community.

Product Review

When a product reaches the “Final Draft” stage, it may be distributed to other individuals and/or organizations for review and comment prior to finalization. Depending on the type and topic of subject matter, the product may be sent to an EPA Office or other organization. For example, the *GPS-Technical Implementation Guidance* was submitted to the EPA GIS Work Group, the *Interim Guidance for Writing Quality Assurance Project Plans for Geospatial Data Activities* was submitted to the EPA GIS Work Group and/or the EPA Quality Staff for review and comment prior to finalization and publication as an EPA ORD publication or report.

Finalization

Upon finalization, the product may be submitted to the EPA GIO for review, dissemination, and/or derivatization into requirements and/or guidance documents, and subsequent promulgation in the EPA.

Publication

After finalization within the GQC, the product is further peer-reviewed through the rigorous procedures outlined by the EPA Office of Research and Development (ORD). Typically, the GQC Chairperson or Ad Hoc Committee Lead completes the forms and process necessary for peer review and publication. The product is then published released as an EPA ORD publication.

Distribution

When published, the product is disseminated to the entire GQC via email. It is also placed for download in the Progress and Products webpage of the GQC Internet website. Simultaneously, the product is submitted to the EPA GIO for review, dissemination, and/or derivatization. The GIO may decide to derivatize the document into requirements and/or guidance documents, and subsequently promulgate the product in the EPA. Other GQC member organizations may derivatize GQC products for adoption themselves, through their GIO, or other appropriate channels.

Accomplishments

This section lists some of the GQCs' accomplishments and the disposition of some GQC products. The products and services listed were developed and/or implemented by various temporary GQC Ad Hoc Committees in a manner which is similar to that described in this document.

Education

Numerous Geospatial-QA related courses, seminars, and workshops have been developed and presented. A general course is available on the GQC website.

Documentation

The GQC develops documents and, when appropriate, submits the products it develops to the appropriate Region or Program Office for approval, issuance and distribution. The documents can be downloaded from the website. The following GQC-developed documents have become pillars supporting EPA geospatial-related policies including the EPA National Geospatial Data Policy (NGDP).

- *EPA Interim Guidance for Developing Global Positioning System Data Collection Standard Operating Procedures and Quality Assurance Project Plans*, August 2008 [EPA/600/R-08/020]
- *EPA Global Positioning System Technical Implementation Guidance*, Revision 2.0, October 2006
- *EPA Guidance for Geospatial Data Quality Assurance Plans*, EPA QA/G-5g, March 2003 [EPA/240/R-03/003]

Consultation

The GQC has responded to numerous requests for information and consultation. Consultations are too numerous to list. The GQC has provided consultation to other Federal agencies, State and local governments, private companies, and citizens – domestic and international.

Cooperation

Other federal agencies, state, and local government personnel have reviewed and provided comment on GQC products. In addition, these entities were an integral part of developing and presenting the *GIS for QA Professionals* course. Further, some members of the GQC continually advised the FGDC to include QA & QC in a visible and notable manner. This effort is coming to fruition in the Appendices of OMB Circular A-16.

Future Direction

Short-Term – Projects, products, and efforts within five years

- Improve and further develop the GQC website by including a “Tools” web page.

- Provide consultation to various EPA organizations on how to use geospatial science to enhance their products and services. For example, how ORD programs and projects can include geospatial demographics to increase the potential and viability of the product to be used in Environmental Justice activities.
- Investigate the use of geospatial-related software that may facilitate Information Management.
- Develop and present a hands-on course titled “ArcGIS for QA Professionals”.
- Assist in developing “open-ended” Standard Operating Procedures that can be adapted for use by GQC members and stakeholders.
- Provide more opportunities for Geospatial-Statisticians to show how statistics are the window for viewing geospatial data quality, and provide training and/or tools section in the website, perhaps beginning with the “Tools” web page.

Long-Term - Continual efforts

- Research, develop, and review tools for geospatial Information Management efforts, such as Microsoft SharePoint.
- Provide input to the Federal Geographic Data Committee (FGDC) and its’ organizations and workgroups. The FGDC coordinates the development of the National Spatial Data Infrastructure (NSDI). The NSDI encompasses policies, standards, and procedures for organizations to cooperatively produce and share geographic data. The 17 federal agencies that make up the FGDC are developing the NSDI in cooperation with organizations from state, local and tribal governments, the academic community, and the private sector. While many geospatial disciplines are addressed by the FGDC, an opportunity exists to provide consultation regarding the QA aspects in the NSDI.
- Through the appropriate channels, provide input to the International Standards Organization (ISO) for their review and possible adoption.
- Network and provide input to the Open Geospatial Consortium, the ASPRS, and other geospatial-related organizations.

Appendix A

Disciplines and Membership

The Geospatial Quality Council is composed of cross-organizational, multidisciplinary staff. Some of the disciplines include, but are not limited to:

- Remote Sensing Specialists
- QA Professionals
- GIS Analysts
- GPS Specialists
- Information Technology Specialists
- Information Management Specialists
- Real Estate Professionals
- Law Professionals
- Engineers
- Chemists
- Biologists
- Ecologists

Some of the Federal, State, and County organizations that have contributed include:

- US EPA Regions 1 through 10
- US EPA Program Offices
- US EPA Office of General Counsel
- US EPA National Enforcement Investigations Center
- US Bureau of Reclamation
- US Department of the Interior
- US Geological Survey
- US Department of Agriculture
- US Federal Geographic Data Committee
- State of New Jersey
- County of San Bernardino, CA

Some Institutions of Higher Learning that have made pro-bono contributions include:

- University of New Hampshire
- University of California
- California Polytechnic Institute

Some Private Sector companies that have made pro-bono contributions include:

- Collaborative Electronic Notebook Systems Association
- EarthPace, LLC
- EarthSoft, LLC



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