THE NORTHEASTERN ARC/INFO USERS GROUP: WHO IT IS AND WHAT IT DOES

Peter V. August
Chair
Northeastern United States
ARC/INFO Users Group

Department of Natural Resources Science
University of Rhode Island
Kingston, RI 02881

The Northeastern United States ARC/INFO Users Group (NEARC) is comprised of ARC/INFO sites in the New England states, New York, New Jersey, Delaware, Pennsylvania, and the District of Columbia. In this paper I will review the history of the users group, describe its goals, and discuss the role that the users group plays in GIS computing in the northeastern United States.

A Brief History and Summary of Activities: 1986-1989

The concept of a Northeastern US ARC/INFO Users Group was formalized at the 1986 ESRI Conference in San Bernadino, California. The first official meeting of the users group was held in June 1986 and was hosted by the New York State Division of Equalization and Assessment in Albany, New York. Approximately 20 people from 7 ARC/INFO sites attended the conference. Considerable time was spent discussing issues of users group goals, organization, formality, protocol, and the frequency with which the group would meet. There was general agreement that the basic purpose of NEARC was to share information among members and to let the users group represent the collective voice of ARC/INFO sites in communicating with ESRI. Gary Smith (University of Vermont) was elected the Chair of NEARC. The attendees summarized the kinds of GIS projects that they were working on. The group unanimously agreed to request that ESRI support an electronic mail system to enhance communication among users and with ESRI-Redlands.

The second meeting of NEARC members was held in October 1986 at the EPA Region I Laboratories in Lexington, Massachusetts. At this one-day conference, the 39 attendees summarized activities at their sites and continued discussion of issues of NEARC goals and membership criteria. Decision was made to limit membership to existing ARC/INFO sites. Vendors of GIS-related products would not be invited to attend NEARC meetings. An "official" statement

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of purpose was adopted and read as follows:

> The purpose of the users group is to provide a regular forum:
> 1) for northeastern users of ESRI's ARC/INFO software, in the interests of establishing and maintaining a relationship with each other;
> 2) to share ideas, applications and data;
> 3) to assist other users; and
> 4) to collectively communicate to ESRI the needs, ideas, and concerns of the group."

Other points of interest in this meeting were discussion of the form and nature of the "forthcoming" product PC-ARC/INFO, the pros and cons of shared resources in the region, regional training needs, GIS project management issues, and a presentation of GIS activities at USGS by David Nystrom. An annual meeting schedule was established and consisted of a Spring gathering to prepare the "Wish-List" that would be sent to ESRI. A second meeting in the Fall would consist of presentations, technical discussions, poster sessions, and software demonstrations.

The next meeting of NEARC members was in March 1987 and was hosted by the University of New Hampshire in Durham, New Hampshire. As in past meetings, attendees introduced themselves and described the kinds of GIS activities currently in progress at their sites. Strains of growth began emerging as the traditional round-the-table briefing by each site was now taking a significant length of time. The minutes of the meeting reflect this and include the comment: "We should commend ourselves for accomplishing this task (site briefings) within the allotted time!" Since the last meeting, PC-ARC/INFO had become a reality. This prompted reconsideration of NEARC membership policy. A new NEARC tradition was initiated and this was assembling the collective thoughts of the membership on what changes should be made to ARC/INFO. Gary Smith compiled a document containing over 50 technical recommendations to ESRI. Copies of the "Wish List" were bound and mailed to Jack Dangermond, President of ESRI. Other matters of discussion at this meeting included the need for a regional training center, the utility of the concept of shared hardware resources, the need for regional data standards, and a preview of the TIN module of ARC/INFO.

The first two-day NEARC conference was hosted by the University of Vermont in October 1987. The meeting was attended by 45 individuals representing 25 ARC/INFO installations. A number of interesting presentations on GIS applications were given by NEARC members. Some of the discussion topics were global modeling, implementing GIS systems, demographic analyses,

monitoring land use change, and studying ground water resources. The agenda also included a presentation by a representative of ESRI (Michael Waltuch) and a demonstration of ARC/INFO running on a Vax Workstation. The NEARC membership unanimously approved, with editorial correction, a formal resolution requesting support from the federal government on developing complex spatial databases. The resolution (Appendix 1) was mailed to officials of the United States Geological Survey, the Environmental Protection Agency, and the Soil Conservation Service.

Staff of the Natural Resources Center in the Connecticut Department of Environmental Protection hosted the one-day NEARC Conference in February 1988. The meeting was attended by approximately 40 people. Issues discussed at this gathering were the place of PC ARC/INFO sites in the regional user base, a briefing by the ESRI representative (Michael Waltuch) on what to expect at the ESRI Conference in March 1988, and sources of error in digitizing from USGS quadrangle maps. Professor Dana Tomlin from Ohio State University gave a featured lecture on the future of GIS data processing. The business meeting was spent reviewing the software development requests that would comprise the 1988 "Wish List" to be forwarded to ESRI. The final compilation consisted of 35 pages of detailed descriptions of modifications and additions that would increase functionality and performance of ARC/INFO.

A committee was formed at the Connecticut meeting and charged with preparing a list of nominees for a NEARC Executive Committee. The Executive Committee would address administrative and organizational issues of the users group. At the ESRI ARC/INFO Users Conference held in Palm Springs in March 1988, NEARC members met and established an organizational scheme for the users group (see below). Gary Smith resigned as Chair having served NEARC for two years and was replaced by Peter August (University of Rhode Island). An Executive Committee was elected and consisted of Gary Smith (University of Vermont), Fay Rubin (University of New Hampshire), Julio Olimpio (United States Geological Survey), and Suzanne Strater (New Jersey Department of Environmental Protection).

The two-day Fall meeting of NEARC members for 1988 was hosted by the University of Rhode Island and was held at the W. Alton Jones campus of the University in November 1988. Prime Computer Corporation made a generous gift of $2,500 to the users group in support of the conference. Over 100 people attended and the growth of NEARC was evident; at least 20 prospective participants were turned away for lack of meeting space! A full agenda included ARC/INFO demonstrations on a Sun Workstation,

briefings on ESRI activities by Michael Waltuch, and contributed papers by NEARC members. There were a number of presentations by invited speakers on important issues in GIS. Topics for these sessions included data documentation, legal issues in data ownership and distribution, classic concepts in cartography and how they apply to GIS, using ESRI's ARCMAIL, integrating remotely sensed data with GIS, and applications for TIGER data. David Beddoe of the Cartographic Division at the National Geographic Society gave an excellent banquet lecture on digital mapping methods at National Geographic. Issues discussed in the business meeting included how to maintain the collegial environment of NEARC in view of its rapid growth, what members wished to see in meeting agendas, and who would sponsor the Fall 1989 conference.

The one-day Spring 1989 meeting of NEARC members was hosted by the consulting firm Camp Dresser and McKee Inc. and was held in Boston, Massachusetts. Over 45 individuals participated and the majority were first-time attendees of a NEARC meeting. The agenda for the gathering included vigorous discussion of data distribution policy in the public and private sectors, processing DLG data, preview of new revisions of ARC/INFO software, news from the Northeast ESRI sales representative, and preparation of the 1989 "Wish List" of technical recommendations that would be sent to ESRI.

Who Comprises the Users Group?

The membership of NEARC reflects a wide range of GIS applications. Most sites are active in areas of environmental management, planning, and natural resource protection. At the moment there are few public or private utilities represented in the user base; however, one of the earliest ARC/INFO installations in the region is at a power company. In the table below, I provide a number of descriptive characteristics that profile the NEARC membership. The data for these tabulations were obtained from the results of the user site surveys compiled by Bill Pauquette (New York State Division of Equalization and Assessment) in 1986 and Fay Rubin (University of New Hampshire) in 1988.

Characteristic	Number of Sites 1986	1988
Type of Institution		
Private	-	4
University	2	5
State Agency	5	11
Federal Agency	1	5
Municipal Agency	-	3
Type of ARC/INFO License		
Minicomputer	8	15
Workstation	-	2
Microcomputer*	-	15
Standalone Microcomputer	-	9
State**		
Delaware	-	1
New Jersey	1	1
New York	2	8
Vermont	1	1
New Hampshire	1	5
Massachusetts	1	7
Connecticut	1	3
Rhode Island	1	2

* This includes sites that also have a mini or workstation license

** Pennsylvania, Maine, and the District of Columbia have had ARC/INFO sites represented in NEARC activities but do not have entries in the User Survey Reports from which this table was developed.

There is a great deal of technical expertise in NEARC. Some of the active members have been involved in geographic data processing for over 6 years. There is also a continuing stream of new members joining the user group who bring fresh perspectives, unique applications, and novel demands upon the technology. In the table below I indicate the time since installation for all the respondents to the 1986 and 1988 user site surveys.

Year of Installation	Type of License		
	Minicomputer	Workstation	Microcomputer
1988	2	2	9
1987	3	-	8
1986	5	-	-
1985	2	-	-
1984	-	-	-
1983	1	-	-
1982	-	-	-
1981	1	-	-

Users Group Organization and Goals

A great deal of time has been spent in past user group meetings establishing the goals, purposes, and mechanics of NEARC. What follows represents the mission and organization of the users group at the time of writing (April 1989). Much of what I report here was summarized by Suzanne Strater and Pat Cummens (New Jersey Department of Environmental Protection) for the users group in 1988.

Goals -- The purpose of NEARC is to provide a forum where ARC/INFO users in the northeastern United States can:

1) meet each other and learn of GIS applications in the region;
2) share technical expertise, application information, data, and tools;
3) assist other users, especially new sites;
4) collectively communicate to ESRI the needs, ideas, and concerns of the group; and
5) address issues of GIS importance that affect ARC/INFO users in the northeastern U.S.

Membership -- Membership in NEARC is open to licensed owners of ARC/INFO. The following states fall within the geographic base of NEARC: District of Columbia, Delaware, Pennsylvania, New Jersey, New York, and the six New England states. Each licensed site has one vote at NEARC business meetings.

Organization -- The current administrative structure of NEARC consists of a Chair and an Executive Committee. The Chair is elected by the membership and serves a two year term. Gary Smith chaired NEARC from 1986 to 1988. Peter August was elected chair in 1988 and will serve until 1990. The duties of this position include: chair the business meeting at NEARC conferences, call and chair all Executive Committee meetings, assist the host of each NEARC conference in technical details, serve as the central contact for user group business, and be the official spokesperson for the user group.

The Executive Committee consists of the previous Chair of NEARC, the current Chair of NEARC, and three individuals elected by the NEARC membership. Each member of the Executive Council serves a two year term. The current NEARC Executive Committee is comprised of Peter August (University of Rhode Island, current NEARC Chair), Gary Smith (University of Vermont, previous NEARC Chair), Fay Rubin (University of New Hampshire), Sandy Prisloe (Connecticut Department of Environmental Protection), and Pat Cummens (New Jersey Department of Environmental Protection). The duties of the Executive Committee include: helping set an agenda for NEARC meetings, making decisions for NEARC when circumstances do not permit waiting for a scheduled meeting of the whole user group, assisting in the logistic details of NEARC meetings, and advising the Chair on issues that NEARC should address.

NEARC remains a very informal institution. There are no by-laws. On business matters that require a vote, each site is entitled to one vote and the majority prevails. Any licensed ARC/INFO site is eligible for membership in NEARC and may participate in all meetings and activities. ESRI provides NEARC a list of all sites in the region and this is used for user group mailings.

What Has NEARC Accomplished?

NEARC's accomplishments in the past few years are a product of the good nature and energy of its members. There is a tangible sense of camaraderie at NEARC meetings. This camaraderie is frequently the basis for the gratis exchange of data, tools (e.g. AML's) and processing hints. It is not uncommon for a NEARC member to call a neighboring site with a technical question rather than calling ESRI in California. At least NEARC sites are in the same time zone and it is not necessary to wait until mid-day to get a question answered.

The annual "Wish List" of suggestions to ESRI has been very

successful. Jack Dangermond, the President of ESRI, has publicly acknowledged the importance of receiving the collective technical wisdom of the users group. Indeed, the reflections of the users group truly represents the opinions and experience of countless person-years of "in-the-trenches" use of ARC/INFO. I have reviewed past NEARC "Wish Lists" to ESRI in light of the form and function of the current version of ARC/INFO (ARC 5.0 beta at the time of writing). It is impossible to determine how many of the "Wish List" suggestions were singly responsible for a change being made or a feature added, nevertheless a great many of the recommendations are now integral features of the software. It is clear, ESRI is responding to the "Wish List" and their response is making ARC/INFO a better and stronger tool for the collective analytical needs of NEARC. Another example of ESRI responding to a users group request might be found in NEARC's call for an E-Mail system (see notes on the Albany meeting of 1986 above). This request may have been significant in providing ESRI the motivation to implement the very useful ARCMAIL system that many ARC/INFO sites now use.

Where is NEARC Headed?

Now is an exciting period for GIS users. We are beyond the marketing/education phase of the evolution of this technology. GIS is now seen as an important and legitimate means of analyzing and presenting spatial data. The number of users is increasing dramatically. This growth of the user base and evolution of the technology has many potential implications to NEARC.

Will NEARC Remain a Cohesive Spatial Unit? -- The number of attendees at NEARC meetings is almost doubling with each conference. The logistic challenges of organizing a 100+ person conference are significant. Who will volunteer to do this when there are 200 attendees for NEARC meetings? Will NEARC have to fragment to maintain a manageable size? Will reducing the size of the user group result in a loss of diversity of its members?

GIS Activism and the User Group -- How visible should NEARC be in terms of policy and funding issues? Are agencies in federal government providing the funding, leadership, and data that we expect/hope from them? Is NSF support for GIS research adequate? Should NEARC and other users groups take visible and active stands on such issues.

ESRI Support For User Groups -- ESRI has established a formal policy of what it will and will not do in support of users group activities. Will this support be enough in the future? At the moment there is a very mutualistic relationship between ESRI and

NEARC. NEARC activities as a users group is a potential marketing plus for ESRI. NEARC is an effective conduit for information exchange between ESRI and its user base in the northeastern US. In many respects, if NEARC succeeds in its goals, so does ESRI. Complimentarily, whatever ESRI does to increase the quality of ARC/INFO, the user community benefits. How much should NEARC expect from ESRI and how much can ESRI expect from its user community?

The Hacker Ethic and the Free Exchange of Information -- In many respects, NEARC members are pioneers in the development of tools and data bases that will have a profound effect on the way that we study, characterize, and manage the landscape. We are all experiencing the same technical and administrative challenges; the only difference is the name of the polygon or the theme of the map. This pioneer attitude breeds camaraderie and an Esprit de corps. When GIS attains the level of commonplace popularity that we now see with spreadsheets and word processors, will the camaraderie still be there? Will the hacker view that information is to be shared freely remain? Will the technical tips, the AML's, and the data sets that are so freely exchanged at NEARC meetings continue to be shared in the same relaxed fashion?

Growth Pains and the Business of Maintaining the Users Group -- As NEARC grows in size, the logistics and costs of meeting and communicating to the membership increases dramatically. For example, the one-day Spring 1989 meeting probably cost over $200.00 to organize and run. For the two-day meeting in the Fall of 1988 almost $8,000 changed hands (this includes meals and lodging costs for participants). Should NEARC apply for non-profit corporation status? Should annual dues be charged members? Should NEARC request financial support from ESRI? Who will be responsible for maintaining the NEARC operating account?

Summary

The northeastern United States ARC/INFO users group is 3 years old. In that time, the size of the active membership has increased over six-fold. As GIS continues to become entrenched in the land managers toolbox, NEARC will continue to grow. The primary mission of the users group is to facilitate the flow of information among ARC/INFO sites in the region. NEARC can claim many successful programs, projects, and meetings. These successes are the result of the energy, enthusiasm, scholarship, and good nature of the individuals that comprise the users group.

Acknowledgements

This paper represents the collective wisdom of all the members of the northeastern ARC/INFO Users Group; I have simply put on paper their thoughts, hopes, and purposes. This is publication 2485 of the Rhode Island Agricultural Station at the University of Rhode Island.

Appendix 1

This Resolution was sent by NEARC to officials at the United States Geological Survey, the Environmental Protection Agency, and the United States Department of Agriculture Soil Conservation Service.

Whereas, the Northeastern ARC/INFO Users Group represents federal, state, private, and academic centers of excellence in Geographic Information System analysis; and,

Whereas, the Northeastern ARC/INFO Users Group represents many decades of experience in using GIS to protect and manage the natural resources of the northeastern United States; and,

Whereas, the Northeastern ARC/INFO Users group has found that soils and landuse/landcover data are essential data layers in a great many GIS applications; and,

Whereas, the automation of soils and landuse/landcover data requires a great deal of time, money, photogrammetric expertise, and disk storage capacity; and,

Whereas, individual GIS centers frequently do not have the financial or technical resources available to automate soils and landuse/landcover data; and,

Whereas, the ultimate benefactors of accurate soils and landuse/landcover data are the taxpayers who depend on federal, state, and municipal governments to protect the environment,

Therefore, be it resolved that the Northeastern ARC/INFO Users Group urges federal agencies like USGS, USDA SCS, and EPA to continue and expand their support of automating current, accurate, and detailed (scale of 1:15,840 to 1:25,000) soils and landuse/landcover data.