



REPORT ON THE JUNE 1990 ORGANIZATIONAL MEETING

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AGENDA

ORGANIZATIONAL MEETING OF THE TASK FORCE

June 5 & 6, 1990

The Westin Hotel
2401 M Street NW
Washington, DC 20037

OVERVIEW

- The purposes of the Meeting are (1) to organize the Task Force of the Coalition around the six program themes that have been identified by the Steering Committee of the Coalition and (2) to lay a foundation for the activities of the Coalition leading up to the Fall 1990 meeting of the Task Force in Washington, DC.
- The Meeting will begin on the evening of June 5 with a vision statement that will present a new paradigm for the management of research and educational information in the final decade of the 20th Century and into the early years of the 21st. This statement will provide the basis for the first round of small group discussions and reports which will concentrate on the backgrounds and experiences of the Meeting attendees and their hopes as to what the Coalition will do and accomplish.
- The Meeting will recess and a reception will ensue at which a delectable selection of hors d'oeuvres together with an ample supply of turkey, roast beef, and pasta, a cash bar, and tempting desserts will sustain a good opportunity for the Meeting attendees to mix with and to get to know each other and a variety of invited guests.
- The Meeting will reconvene on the morning of June 6 in order to conceptualize the program of the Coalition by progressing through three rounds of small group discussions and reports focused by remarks from speakers who will survey the opportunities and challenges of the six program themes. Each small group discussion and report will concentrate on the single question "What should be the top priorities of the Coalition in this area?" posed for each program theme.
- Attendees will prepare for and record their personal responses to the Meeting by completing a "program theme questionnaire" that, among other things, asks three basic questions about each of the six program themes: (1) What information does the Coalition need to plan its program in this area? (2) What resources, human and financial, does the Coalition need to execute its program in this area? and, (3) What should be the priorities of the Coalition in this area?
- A report of the proceedings of the Meeting will be prepared to record the remarks of each speaker and the recommendations of each small group and to distribute the completed program theme questionnaires for the benefit of Coalition participants who could not be present at the Meeting as well as for the benefit of Meeting attendees.

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AGENDA
Organizational Meeting of the Task Force
June 5 & 6, 1990

SCHEDULE FOR JUNE 5, 1990

5:30 pm Registration and refreshmentsBallroom Foyer

Cold drinks will be available.

7:00 pm Welcome and orientationBallroom II

Richard West, Associate Vice President of the University of California and Chair of the Steering Committee of the Coalition, and Paul Evan Peters, Senior Program Officer for Technology for the Association of Research Libraries and Director of the Coalition, will call the Meeting to order and present the agenda.

7:15 pm Vision Statement.....Ballroom II

Jerome Yavarkovsky, Director of the New York State Library and a member of the Steering Committee of the Coalition, will present a challenging new model of how high performance computers and networks can be used to distribute and access research and educational information.

7:45 pm Introductory small group discussions and reportsBallroom II

The small groups will discuss and report upon the relevant backgrounds and experiences of their members together with their hopes for what the Coalition will do and accomplish.

8:30 pm ReceptionBallroom I

A selection of hors d'oeuvres together with turkey, roast beef, and pasta, a cash bar, and a selection of desserts will be available.

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AGENDA
Organizational Meeting of the Task Force
June 5 & 6, 1990

SCHEDULE FOR JUNE 6, 1990

- 7:30 am Registration and continental breakfast.....Ballroom Foyer
Coffee, tea, juices, mineral water, sodas, and a variety of bread stuffs will be available.
- 8:30 am Announcements and instructionsBallroom II
Richard West and Paul Evan Peters will call the meeting to order, make any announcements that need to be made, and review the objectives for the day's proceedings.
- 8:45 am First round of program conceptualizationBallroom II
The program theme *Incentives and disincentives in research and educational communication* will be introduced by Ann Okerson, Director of the Office of Scientific and Academic Publishing at the Association of Research Libraries.
The program theme *Architectures of and infrastructures for networked information services* will be introduced by William Y. Arms, Vice President for Academic Services at Carnegie Mellon University and a member of the Steering Committee of the Coalition.
The small groups will discuss these two program themes formulating and proposing top priorities for the Coalition in these areas.
- 10:15 am Break.....Ballroom Foyer
Coffee, tea, mineral water, and sodas will be available.
- 10:30 am Second round of program conceptualization.....Ballroom II
The program theme *Information exchange among projects seeking to advance the state of the art* will be introduced by Ronald L. Larsen, Associate Director of Libraries for Information Technology at the University of Maryland at College Park and a member of the Steering Committee of the Coalition.
The program theme *Environments for testing and evaluating service and product innovations* will be introduced by Edwin Brownrigg, Director of Research at the Memex Research Institute.
The small groups will discuss these two program themes formulating and proposing top priorities for the Coalition in these areas.

AGENDA
Organizational Meeting of the Task Force
June 5 & 6, 1990

SCHEDULE FOR JUNE 6, 1990
(continued)

12:00 pm LunchBallroom I

A deli buffet will be available together with iced tea, mineral water, and sodas.

1:00 pm Third round of program conceptualizationBallroom II

The program theme *Codes, policies, and practices that clarify rights and duties* will be introduced by Prudence Adler, Assistant Executive Director - Federal Relations at the Association of Research Libraries.

The program theme *Professional and user education for effective access to and management of networked information* will be introduced by Jane Norman Ryland, President of CAUSE.

The small groups will discuss these two program themes formulating and proposing top priorities for the Coalition in these areas.

2:30 pm General discussionBallroom II

Richard West will moderate a general discussion of whatever remains to be said after the vision statement, the introductory small group discussions and reports, and the three rounds of program conceptualization.

2:45 pm Wrap-up and look-aheadBallroom II

Richard West and Paul Evan Peters will close the meeting with a brief set of remarks about the findings of the Meeting and the likely upcoming events of and timetable for the Coalition.

3:00 pm Adjournment.....Ballroom II

**COALITION FOR
NETWORKED
INFORMATION**

To Advance Scholarship
and Intellectual Productivity
1527 New Hampshire Ave., N.W.
Washington, D.C. 20036
202 462-7849 FAX
202 232-2466

MISSION, THEMES, AND STRATEGIES

MISSION STATEMENT

- The mission of the Coalition for Networked Information is to promote the creation of and access to information resources in networked environments in order to enrich scholarship and to enhance intellectual productivity.
- The Coalition pursues its mission by seeking to realize the information distribution and access potential of existing and proposed high performance computers and networks that support the research and educational activities of a wide variety of institutions and organizations.
- The Coalition accomplishes this realization by undertaking activities, on its own and in partnership with others, that formulate, promulgate, evaluate, and promote policies and protocols that enable powerful, flexible, and universal access to networked information resources.
- The Coalition directs the combined intellectual, technological, professional, and financial resources of its members according to a shared vision of how the nature of information management is changing and will continue to change through the end of the 20th Century and into the beginning of the 21st.

ORGANIZATIONAL STRATEGY

- The Association of Research Libraries (ARL), CAUSE, and EDUCOM comprise the Coalition which functions as an activity of ARL that takes direction from CAUSE and EDUCOM through their chief executives.
- The Coalition carries out its work through a Task Force of institutions and organizations that pay its assessed dues, actively engage in its program of work, and are governed by its leadership.
- The Coalition Task Force is composed of the senior administrator of libraries and the senior administrator of information technologies of higher education member institutions and comparable leaders and officers from other member institutions and organizations.
- The positions assumed and activities undertaken by the Coalition and its Task Force are coordinated by a nine person Steering Committee appointed by the chief executives of ARL, CAUSE, and EDUCOM with each executive naming three members.

MISSION, THEMES, AND STRATEGIES

PROGRAM THEMES

- *Incentives and disincentives in research and educational communication*

A complex system of incentives and disincentives both enables and constrains existing research and educational communication processes. Examples include promotion, tenure, and other peer review processes, certification and accreditation proceedings, patent, trademark, copyright, and other intellectual property policies, and costs, revenues, and other economic structures and dynamics. The Coalition elucidates and analyzes this system and formulates and investigates alternative systems that foster the creation of and access to networked information resources.

- *Architectures of and infrastructures for networked information services*

Cost-effective interoperation of distributed digital libraries that house rich collections of research and educational information depends upon shared networked information service architectures and infrastructures. Examples include models of and standards, protocols, and guidelines for collaborative transaction processing and the storage, retrieval, and display of multimedia objects in heterogeneous network environments. The Coalition conceptualizes these architectures and facilitates the implementation of these infrastructures.

- *Information exchange among projects seeking to advance the state of the art*

Progressive advancement of the state of the art in the application of networked information resources to research and educational processes relies upon information about experiments and demonstration projects that is made available in a uniform, timely, and reliable fashion. Examples of such projects include those that are concerned with remote access to online library information systems, digital information conversion of library collections, and network-based journals, monographs, databases, and multimedia presentations. The Coalition collects, organizes, and distributes a coordinated set of descriptive, technical, and documentary information about these sorts of projects whether they are undertaken by its members or by other institutions and organizations.

- *Environments for testing and evaluating service and product innovations*

Change agents and risk takers who research, develop, and promote service and product innovations require access to environments where their innovations can be tested and evaluated. Examples of such innovations are those that are concerned with increasing the scope, power, and accessibility of networked information resources or with the role of such resources in the redefinition of the relationship between authors, readers, and intermediaries in research and educational communication processes. The Coalition orchestrates the identification and management of suitable testing and evaluation environments for those innovations that are ready to be subjected to the rigors of field conditions.

- *Codes, policies, and practices that clarify rights and duties*

Open and reliable access to networked information resources and full and equitable participation in research and educational communication processes which depend upon such resources are insured by a variety of personal, institutional, professional, and governmental codes, policies, and practices that clarify both rights and duties. Examples of the issues at stake include free speech, privacy, confidentiality, privatization, commercialization, and resource and asset sharing. The Coalition gives voice to and represents the interests of authors, readers, and intermediaries in the formulation and promulgation of these codes, policies, and practices.

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MISSION, THEMES, AND STRATEGIES

- *Professional and user education for effective access to and management of networked information*

A variety of new skills are essential to effective access to and management of networked information resources and these skills will evolve rapidly for the rest of the 20th Century and well into the 21st. Examples include configuration and operation of personal computers, workstations, and local area networks, design and specification of databases and database services, visualization of and navigation in complex information networks, and planning, budgeting, and managing projects with significant capital as well as labor components. The Coalition identifies, categorizes, and develops the content and process components of these skills and provides educational and training opportunities appropriate to the needs of the professional and user communities of its member institutions and organizations.

INVESTMENT STRATEGY

- *Secretariat*

The Coalition supports a full time program officer at the senior technical management level and one-half of a technically-skilled administrative support person. These staff direct the affairs of the Coalition by articulating and advocating its mission, themes, and strategies, by orchestrating its planning and consensus building, and by managing and representing its program and assets.

- *Technology*

The Coalition supports a networked information server plus associated communications and support hardware and software. This server enables the Coalition to pursue its mission and to manage its program in a manner that is consistent with the vision that inspires its members and to provide access to the products and services that result from its activities.

- *Information dissemination*

The Coalition supports information dissemination activities that are primarily network-based but which utilize print media whenever a given target audience is best served by so doing. These activities insure that information about the Coalition and information compiled by the Coalition is delivered to the target audiences involved in as timely, accurate, comprehensive, and cost-effective a fashion as is technologically feasible.

- *Meeting facilities and amenities*

The Coalition supports the facility, meal, and refreshment expenses that result from its Steering Committee, Task Force, and other meetings. Travel and housing expenses that result from such meetings are generally covered by the member institution or organization with which a given individual is associated.

- *Travel and housing expenses and honoraria*

The Coalition supports the travel and housing expenses of experts and other parties invited to its meetings and activities in those cases in which such support is necessary to secure the participation of a key individual. The Coalition also provides honoraria to those invited experts and other parties who are not associated with a member institution or organization and who make significant contributions of time and effort.



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Washington, D.C. 20036
202 462-7849 FAX
202 232-2466

A UNIVERSITY-BASED ELECTRONIC PUBLISHING NETWORK

Jerome Yavarkovsky
Director
New York State Library

SUMMARY

Note: The full text of this paper is reproduced as Vision Statement #1 in Section 2 of this binder and was published in *EDUCOM Review* 25:3 (Fall 1990) 14-20.

- It is time to talk about the purpose, substance, and process for joining CNI institutions in a vast and powerful system for scholarly communication. The content of the network, not just the workings of the superhighway connecting institutions, is a topic warranting attention.
- Members of CNI and others in the research community should establish a university-based electronic publishing network. It would:
 - Facilitate speed and access to research results;
 - Bring order to the electronic publishing process;
 - Facilitate the current trend of collaborative research; and,
 - Enhance the availability of research results not readily communicated in print form, e.g. three dimensional representations.
- The structure of such a network would need to take into account:
 - Whether the material would appear in both online and print formats;
 - Who would be responsible for archival storage;
 - The governance of the online publishing network;
 - The establishment of revenues and fees;
 - Consideration of intellectual property rights;
 - Development of standards for creating, storing, accessing, and distributing documents; and,
 - Creation of directories and/or indexes for the network.
- CNI members should provide the leadership to develop the necessary infrastructure to support electronic publishing. We should control electronic publishing to our economic and intellectual advantage..

October 18, 1990

To Advance Scholarship
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Washington, D.C. 20036202 462-7849 FAX
202 232-2466

INCENTIVES AND DISINCENTIVES IN RESEARCH AND EDUCATIONAL COMMUNICATION

Ann Okerson

Director, Office of Scientific and Academic Publishing
Association of Research Libraries

SUMMARY

Note: The full text of this paper was published as "Scholarly Publishing in the NREN" in *ARL: A Bimonthly Newsletter of Research Library Issues and Actions* 151 (July 4, 1990) 1-4.

- In initiating the National Research and Education Network, the U.S. is investing heavily in the future of the nation. The Network is a tangible expression of government philosophy that innovation and national distribution of knowledge are essential for the success of our society in the next century.
- The main incentives for CNI to actively create and support a scholarly publishing component within the proposed National Research and Education Network are:
 - Prices for printed products of scholarly publishing through the private sector are increasingly dramatically.
 - There is increasing concentration of scholarly publication in the hands of a small group of publishers.
 - There is growing tension between the academic ideals of freedom of access to information and the corporate sector's need to focus on the profitability of selling information.
 - In the current commercial system, private publishers own the copyright for the results of published research paid for largely through government-funded projects with the result that publicly supported research is becoming increasingly difficult for the public to own and to read.
 - Foreign ownership of many publications is contributing to the rise in cost of many publications due to the relative weakness of the U.S. currency.
 - Document delivery through interlibrary loan is only a partial solution to access due to copyright restrictions, inevitable delays, and evolving pay-for-use strategies.
 - Journals are becoming less important as the source in which research is first reported.
- Ownership is the key to solutions. The higher education community, as producers, arbiters, and ultimate consumers of scholarly materials, are entitled to ownership benefits.
 - CNI should create a Corporation for Networked Scholarly Publishing which would:
 - Formulate a statement of principles, including a commitment to availability, affordability, directories, and friendly access;
 - Take an active role in deliberations about the privatization and commercialization of the Network;

INCENTIVES AND DISINCENTIVES IN
RESEARCH AND EDUCATIONAL COMMUNICATION

- Develop ownership and copyright policies; and
- Review academic incentives to give needed recognition to electronic publication.
- Our greatest disincentive is the lack of a publication structure in the electronic networking environment; it is a vacuum. There are great opportunities for creation and experimentation, and we should not be held captive by existing traditions.

OBSERVATIONS AND RECOMMENDATIONS

Collaborate with others

- CNI needs to work with other key players such as journal editors, university press directors, scholarly associations, and key research universities in order to jointly explore and resolve issues in this area.
- CNI is a logical catalyst for action and change in this area but needs to work through both faculty and administrative constituencies. Papers like Ann Okerson's should be given at meetings of presidents, academic vice presidents, and discipline professional societies at the same time that CNI Task Force members are raising local consciousness through meetings with their bosses and faculty senates.
- An interest and commitment must be built up among researchers, creating a demand for these services. Communications lines must be opened with research associations to establish a dialog. Highest priority should be given to achieving consensus between CNI and professional research associations like ACM and IEEE on uses of the NREN.
- We are in a situation where we need to change the way the world perceives ownership. As representatives of the providers of information, CNI members should bring discussion on electronic information to the regional or local level, working toward building guidelines for people producing knowledge in their new environment.
- "Selling" change to the disciplines will require constant and consistent communications from many people. CNI members need to write articles for the discipline related journals.
- CNI should support a group to promote scholarly publishing in the NREN. This group would define principles, standards, guidelines, etc. so that there would be a concrete framework within which universities and given disciplines can consider moving forwards. We should actively involve publishing faculty to address the "culture of publishing" issue, i.e. how to make electronic publishing acceptable and even attractive to scholars.
- We need to build a shared vision of electronic publishing among the actors in the universities themselves, including faculty, administrators, and trustees.

Survey needs

- CNI needs to conduct an environmental scan to both articulate clearly the sphere of issues and to identify groups, associations, and activities currently underway in these areas.

INCENTIVES AND DISINCENTIVES IN
RESEARCH AND EDUCATIONAL COMMUNICATION

- CNI should gather empirical data on WHO, WHERE, needs to use WHAT INFORMATION for WHAT PURPOSE.
- CNI should engage scholars in the field of social change to help engineer its various tasks.
- CNI should profile current Internet users as to how they use it, what they use it for, and what they perceive as needs.
- CNI should develop economic models of both the print and electronic publishing processes and analyze the value added at each stage of the production and distribution process.
- CNI needs to analyze successful electronic publishing ventures to see what actually succeeds.

Intellectual property issues

- Other themes can be addressed and issues resolved but they will have marginal impact unless the intellectual property question is resolved. This should be our number one priority.
- Copyright and other intellectual property issues are the most important inhibitors to the development of an information network. CNI can help to work out the necessary compromises and do the essential consensus building. This should be given the highest priority.
- CNI needs a model of how commercial and non-commercial publishers or authors might be brought into the era of electronic scholarly publishing in a way that deals with copyright.
- CNI should organize regional meetings of journal editors and university press directors to discuss intellectual property and copyright issues.

Acceptability of electronic publishing in academe

- CNI should perform a comprehensive review of the academic incentives to networked information resources.
- CNI needs to create a vision of the benefits and merits of electronic publishing and sell it within academe. We could publish "how to" guidelines to change the "publish or perish" paradigm and lobby for their acceptance by scholarly societies, academic senates, and university leadership.
- CNI should establish as a priority that its member institutions accept electronic forms of publication in promotion and tenure reviews.
- CNI should not try to directly orchestrate changes in promotion, tenure and peer review. These will change in response to other changes rather than being changed directly.

Miscellaneous

- CNI should establish a working group to define principles, objectives, and standards for scholarly publishing in the electronic environment.
- Top priority must be given to fostering familiarity with electronically published materials. A large num-

INCENTIVES AND DISINCENTIVES IN
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ber of people recognizing the value of electronic publishing will give rise to pressure to solve the problems hindering its wider use. Solutions will be more easily found and accepted in this environment.

- CNI needs a clear, cogent statement of the economic advantages of providing electronic information services to universities, and of the reasons for universities (rather than private groups) providing the services.
- CNI should focus on the electronic publication of government produced data as a high priority which can be achieved quickly. Agencies of the federal government produce a large volume of high demand, unrestricted materials.
- Rather than focusing on transformations of traditional printed materials, CNI should focus on raw or refined research data as untapped resources, which if available electronically, would enhance the information environment.
- CNI should develop models for transition of traditional journals to electronic form, including actual prototypes which would yield cost and usage data. One possibility would be to set up the models as computer games with various scenarios.
- CNI should develop a position paper for universities to take to the traditional publishing community which would address issues such as whether the transition to electronic publishing should be revenue neutral for the publishers and whether electronic publishing replaces or supplements the existing print products.
- CNI should do a comparative cost study on whether the educational community should create its own databases or purchase commercial ones.
- CNI should develop a model database license contract and checklists of areas that institutions need to look at in licensing databases.
- CNI should develop a structure for communicating about "works in progress."
- CNI should create environments on the network that utilize market forces to attract participation.
- CNI should always leave the door open for private enterprise to get involved in solving problems of handling information.



ARCHITECTURES OF AND INFRASTRUCTURES FOR NETWORKED INFORMATION RESOURCES

William Y. Arms
Vice President for Academic Services
Carnegie Mellon University

SUMMARY

Note: Transparencies used during this presentation appear in this section after the observations and recommendations.

- The information resources on the proposed National Research and Education Network will come from very diverse providers and will be used by a heterogeneous set of users. Great diversity of computing environments will continue to exist. These factors will remain beyond the control of the planners and operators of the Network if the Network is to realize its long-term promise of revolutionizing research and educational communication.
- The Internet, based on TCP/IP and some ISO protocols, will continue to be the basis for academic networking. Only the Network can be made coherent and achieving that requires work and agreements in a number of architectural areas.
- Key issues to be resolved while designing an architecture for the Network, and suggestions for what the Coalition can do to help in this regard, are:

- **How will users know what's on the Network?**

The Coalition can recommend a standard name server and can develop access procedures for the various components of the system.

- **What formats will be used to store the information?**

Possible formats include structured text, document images such as bit-mapped representations, graphs and tables that can be manipulated, and hypermedia.

- **How will searching and retrieval be organized?**

Decisions need to be made on the use of protocols such as Z39.50 and how search engine resources should be allocated and managed.

- **What authentication, statistics, and accounting procedures are needed?**

A universal authentication system will be needed and decisions on the type of payment system will have to be made.

- **How will the Network be managed?**

Since users will often be connected to the Network through a regional network which is connected to a

ARCHITECTURES OF AND INFRASTRUCTURES FOR
NETWORKED INFORMATION RESOURCES

OBSERVATIONS AND RECOMMENDATIONS

Directory

- This should be the highest priority of the six theme areas because it precipitates action and progress. Creation of a CNI sponsored directory touches on all of the other themes.
- This is the area in which most rapid and visible progress can be made. There is a huge amount of information already available via the network but it is too difficult for the average faculty member to reach. CNI should foster the distribution of generic software that campuses can install to provide simple access to network resources. This is within the state of the art now.
- A network directory is essential to gaining a critical mass of users and thereby gaining credibility.
- The first and most important thing for CNI to do is to develop a directory of existing networks, the constituents they serve, and the needs that they meet. From this information can come a sense of what networks need to be developed and how to go about doing so. This activity will give CNI much visibility that should lend credibility to its program.
- We need to get librarians and computing services people together to exchange information and to work together to design a directory system.

Standards development

- CNI should identify essential standards in all format areas and should support testing and implementation of standards in production environments.
- CNI should gather information about the technical environments used by leading projects, the gaps that are foreseen, and the options for filling them.
- CNI should prepare and maintain a document describing current and proposed standards that will facilitate networked information services. The document should be distributed to decision makers in libraries, computer centers, and university administrations.
- CNI should coordinate efforts with NIST and other standards organizations. If CNI can mediate agreement on what standards are necessary and facilitate their rapid development, this will be a very major accomplishment.
- The standards area is already well-covered by NISO. Development of architecture should be done by small groups, and while it might be useful to report to CNI on this type of research work, CNI is the wrong vehicle for actually trying to define architectures. It might, by bringing funding to bear, be able to accelerate existing work or improve the community review such work receives.
- CNI should be the conscience of the library/computer community with regards to needed standards, protocols, and guidelines.
- CNI needs to reach a consensus on standards and on standard equipment platforms.

ARCHITECTURES OF AND INFRASTRUCTURES FOR
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- TCP/IP should be made the official standard communications protocol.
- CNI needs to set data exchange standards for full text and non-text (image) delivery, particularly via a network.
- Standards are important, as are motherhood and the flag, but if we wait to establish standards before networks, the latter will never happen. CNI might well convene a standards committee to begin the process of coordination, consolidation, and review of protocols that now exist. This process could well lead to the articulation of a framework of standards that can be applied to existing and future networks.

Miscellaneous

- CNI needs to form a technical working group to provide a framework for these issues.
- Highest priority should be given to settling on a standard platform, such as X-windows workstations.
- CNI should take the initiative in establishing a validation system for the network and its users.
- CNI should promote and facilitate the interest of corporate sponsors in alternative ways of implementing resources in electronic formats and in how those resources are examined and manipulated.
- CNI should define structures for access, statistical reports, accounting procedures, and mechanisms for fee collection.
- Priorities should be chosen at this time with the purpose of accomplishing some valuable (to faculty) results in a reasonable time.

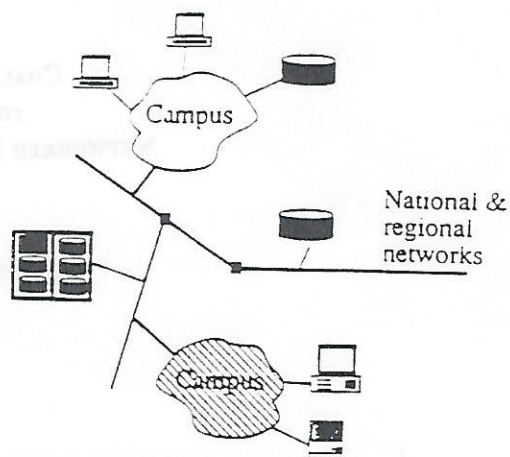
COALITION
FOR
NETWORKED INFORMATION

Three Assumptions
and
Five Questions
about

THE ARCHITECTURE OF
NETWORKED INFORMATION

William Y. Arms
June 6, 1990

National Networked Information



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THREE ASSUMPTIONS

ASSUMPTION 1

The Internet is the basis for academic networking.

- National and regional networks providing a coherent set of services.
- Based on TCP/IP with some ISO protocols.
- Steady evolution in speed and access.

ASSUMPTION 2

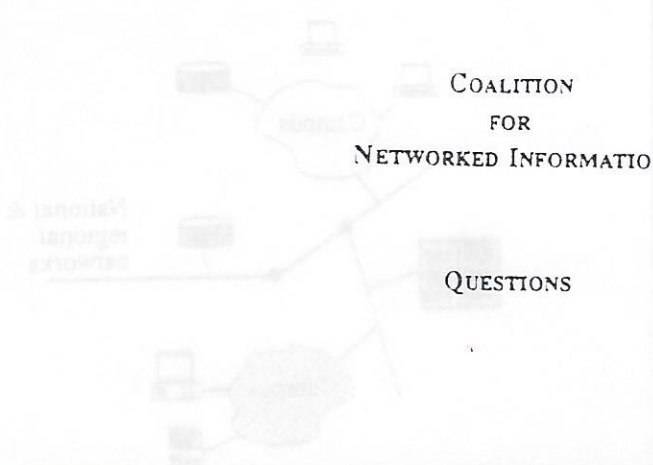
Users will have a wide diversity of computing environments.

- Different types of campus computing.
- Different levels of resources.

ASSUMPTION 3

The providers of electronic information will be highly diverse.

- Primary (e.g. Lexis, ...) and secondary information (e.g. OCLC, ...).
- Differing financial motives.



COALITION
FOR
NETWORKED INFORMATION

QUESTIONS

QUESTION 1

How do users know what information is available on the network?

- Catalogs of information.
- Name servers (X.500, Hesiod, ...).
- Authentication and financial procedures.

QUESTION 2

What formats will be used to store information?

- Structured text (e.g. MARC, SGML, ...)
- Document images (e.g. Postscript, Fax, ...)
- Compound documents with graphics, tables, mathematics, etc.
- Non-traditional forms of information.

QUESTION 3

How will searching and retrieval be organized?

- Retrieval protocols (e.g. SQL, Z 39.50, ...)
- Descriptions of protocols, search fields, etc.
- Resource management.

QUESTION 4

What authentication, statistical, and accounting procedures are needed?

- Validation of users or groups of users (Kerberos, ...).
- Accounting procedures (pay by the drink, electronic postage stamps, block subscriptions, ...).

QUESTION 5

How will the network be managed?

- End to end quality management (SNMP, ...).
- Resource control.



INFORMATION EXCHANGE AMONG PROJECTS SEEKING TO ADVANCE THE STATE OF THE ART

Ronald L. Larsen
Associate Director of Libraries for Information Technology
University of Maryland at College Park

SUMMARY

Note: Transparencies used during this presentation appear in this section after the observations and recommendations.

- The Coalition's role in this area should be to collect, organize, and distribute a coordinated set of descriptive, technical, and documentary information about projects that involve information resources on the proposed National Research and Education Network.
- The objective of the Coalition should be to provide access to information about experiments and demonstration projects in a **uniform, timely, and reliable** fashion.
- The issues and challenges that the Coalition will face and encounter in pursuit of this objective are:
 - Operational standards and guidelines;
 - Representational formats;
 - Display formats;
 - Page layout formats;
 - Application layer protocols;
 - Cross-referencing bit-mapped documents and bibliographic databases;
 - Intuitive interfaces; and,
 - Self-guiding access.
- Even in existing electronic networks people are getting more and more access to more and more things than ever before. What's missing is an infrastructure to ensure that we get only the things that we want.
- In setting up access to the Network, we need to:
 - Have established standards and agreements on the types of formats that will be supported;
 - Have an understandable and self-guiding directory;

INFORMATION EXCHANGE AMONG PROJECTS SEEKING TO
ADVANCE THE STATE OF THE ART

- Utilize existing structures, such as online catalogs in libraries, to organize and increase access. For example, a search in a local library's online catalog on the topic of "supercomputers" should refer users to their regional supercomputer node as well as to publications in the library collection. Users should even be able to depress a function key and be connected to that supercomputer node.

OBSERVATIONS AND RECOMMENDATIONS

Directory, clearinghouse, electronic bulletin board, newsletter

- CNI's clearinghouse function will be critical in helping us build on each other's projects. CNI needs more than a LISTSERVer - CNI needs good project descriptions, indexing, and opportunities to learn more in depth about projects via presentations or poster sessions at Task Force meetings.
- CNI can develop a high quality directory of information resources already on the networks, including libraries, campus information systems, datasets, images, etc. This information should be easily accessible to the end-user. Using the MARC format for the description of networked information resources could be the way to go but forcing the matter could be detrimental as well.
- CNI should sponsor an Internet directory; work as a "broker" not a "doer."
- A synthesis of information on major projects utilizing networking technologies would be useful; it is impossible to digest all of the information currently available.
- CNI should provide an information directory on research and development in information technology.
- CNI should create a newsletter to disseminate information about electronic publishing projects currently underway and about data sources already available across the Internet. The purpose of the newsletter would be to make people aware of what data is already available on the Internet, how data is being distributed electronically elsewhere, and the kinds of development projects that are being undertaken.
- CNI should establish a standard reporting structure and enlist member support to contribute to an electronic bulletin board or other mechanism that would report on local research and application of networking technologies.
- CNI should publicize and promote the existing network discussion lists related to this topic.

Miscellaneous

- CNI should become involved in development of uniform standards of evaluation so that we can communicate to each other about the success of projects in some kind of standard way.
- CNI should encourage scholars to create comprehensive, well-written abstracts for inclusion in the network structure.
- CNI should encourage CAUSE and EDUCOM to publish electronically a refereed article on a networking topic twice a year.
- CNI should enhance the things we are doing now; for example, encourage EDUCOM to develop a MARC format database of its LISTSERVers which could be used on campus networks. CNI should also develop a

INFORMATION EXCHANGE AMONG PROJECTS SEEKING TO
ADVANCE THE STATE OF THE ART

white paper aimed at vendors and service providers which gives guidance on the MARC format and its use to document information.

- CNI needs to share information on the current costs for information and the different ways that universities bear those direct and indirect expenses.
- CNI needs to create a way to filter what arrives at an electronic address.
- CNI should develop an employment directory (openings for academic positions) on the network.
- Until the infrastructure basics are in place, this aspect of CNI's program can wait.
- CNI should use the dissemination of different layers of information from itself as a new model of scholarly communication in a networked environment.

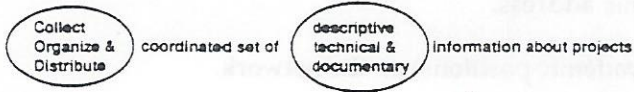
Information Exchange

among projects seeking to advance the state of the art

Coalition for Networked Information
Program Theme 3

Objective: Provide access to information about experiments and demonstration projects in a uniform, timely, and reliable fashion.

Nominal CNI Role:



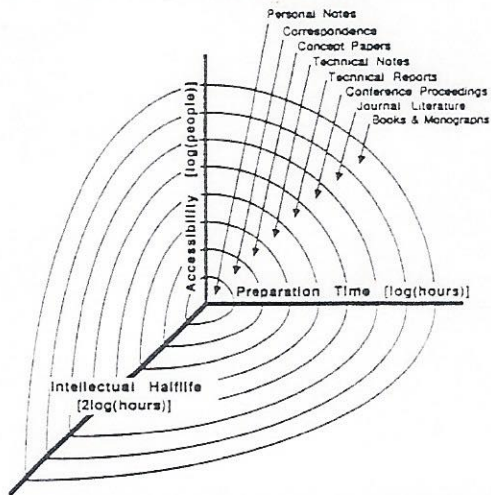
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Issues & Challenges

- Operational standards & guidelines
- Representation formats
 - Bit-map, ASCII, indexed files, Vector graphics, ...
- Display formats
 - TIFF, Group-4 FAX, Display PostScript, ...
- Page layout
 - SGML, ODA, ...
- Application layer protocol pilots
 - Z39.50, Z39.58, Z39.63, ...
- Cross-referencing bit-mapped documents to bibliographic databases
- Intuitive interfaces
- Self-guiding access

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Traditional Relationships In Print Media



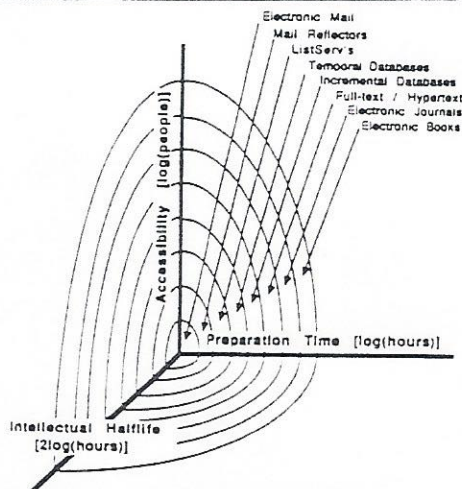
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Network Approaches & Opportunities (Examples)

- Expand network access to library information resources
 - secondary (bibliographic) resources
 - primary content (image & text)
 - numeric databases
- Link libraries to other network resources
 - other libraries
 - project descriptions
 - demonstration systems
- Build & maintain comprehensive, online, searchable directories
 - Special interest groups
 - Information resources
 - Computational resources
 - hypermedia & other interactive media
 - personnel directories
 - federal data resources
- Encourage and facilitate collaboration
 - CNI E-mail reflectors
 - * CNI-TF@umd5.umd.edu for CNI Task Force communication
 - * CNI-SC@umd5.umd.edu for communication with CNI Steering Committee
 - * (send administrative requests to RLarsen@umd5.umd.edu)

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Changing Relationships for Electronic Media



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ENVIRONMENTS FOR TESTING AND EVALUATING SERVICE AND PRODUCT INNOVATIONS

Edwin Blake Brownrigg
Director of Research
Memex Research Institute

SUMMARY

- We should be prepared for several different types of electronic libraries to emerge in each of our individual institutions and organizations. Some fields, such as law, have already created a kind of electronic library.
- We should use networks to:
 - Link those electronic libraries to each other and their separate and common users; and,
 - Link them all to similar clusters of electronic libraries at other institutions and organizations.
 - We are all familiar with the seven layers that constitute the open systems interconnection reference model. To guide our striving toward the "virtual library" of the future we should begin thinking of a twelve layer cake of which the first seven are those of the existing reference model. The five new layers that are needed to insure the degree of "information interconnection" required by the virtual library are:
 - Bilateral agreements that allow individual providers to share networked information resources;
 - Multilateral agreements that allow groups of providers to share networked information resources thereby setting general terms and conditions for bilateral agreements;
 - Location information that allows networked information resources to be identified and accessed;
 - Financial mechanisms that allow activity to be measured and charged; and,
 - Exchange standards that allow complicated information objects to exist and be processed on a wide variety of technology platforms.
- What CNI needs to do is:
 - First, promote the establishment of bilateral relations among its members, and between its members and other institutions and organizations, thereby allowing us to experiment among ourselves, preparing us to move on to more ambitious and complex multi-lateral relations, and eventually bringing us steadily closer to the virtual library;
 - Begin work immediately on mechanisms for monitoring and charging for use of networked information resources.

ENVIRONMENTS FOR TESTING AND EVALUATING
SERVICE AND PRODUCT INNOVATIONS

OBSERVATIONS AND RECOMMENDATIONS

An active role

- Within this high priority issue, CNI needs to both recognize the diversity and independence of each its members and yet seek collaboration and information/technology transfer.
- CNI should serve as a catalyst for innovation and monitor projects through testing and evaluation.
- CNI needs to broadly identify and define research needs and ensure that we include user behaviors as well as system operations.
- CNI should be viewed as the coordinator and facilitator of a test-bed environment. CNI should focus on applying shared campus resources to the testing and evaluation of experimental projects. CNI should develop standards for the evaluation of projects. It could fund some of the costs of off-campus use and the costs of equipment and communications of beta testers.
- Securing the cooperation of test sites seldom presents problems for network researchers; however, if CNI can assist with securing cooperation of information property owners, it will provide a valuable service.

An intermediary role

- Orchestration of projects by CNI is not needed; CNI should not function as the *Consumer Reports* of networking. CNI should serve as a broker or facilitator but not engage in this work itself.
- Where researchers are not equipped to deal with off-campus users, CNI should serve as the intermediary by collecting and disseminating documentation, serving as consultant to off-campus users, and by providing a staff person who would be responsible for contact with end-users.

Miscellaneous

- CNI should work to influence freer access to resources at each Task Force member's institution.
- CNI should develop economic models for information access to electronic publications.


**COALITION FOR
NETWORKED
INFORMATION**

To Advance Scholarship
and Intellectual Productivity

1527 New Hampshire Ave., N.W.
Washington, D.C. 20036

202 462-7849 FAX
202 232-2466

CODES, POLICIES, AND PRACTICES THAT CLARIFY RIGHTS AND DUTIES

Prudence Adler

Assistant Executive Director - Federal Relations and Information Policy
Association of Research Libraries

SUMMARY

- CNI was founded on the desire to shape, influence, and direct our future in networking. To achieve this goal, we must articulate codes, practices, rights, and responsibilities. Identifying the key principles that should guide policymakers in the creation or modification of laws concerning networking will be an important task of CNI.
- In the first session of the 101st Congress, 125 information policy and information technology-related bills were introduced. Topics ranged from telecommunications, broadcasting, satellite transmission, intellectual property, computer security, library and archives policy, and federal information resources management.
- Three trends are currently having the most influence in shaping national information policy:
 - While debate on national information policy from the 1960's through most of the 1980's was framed within a civil liberties context, legislation is now and likely will continue to be framed within an economic perspective.
 - There is an increase in the overlapping content and interrelatedness of legislation concerning government information policy.
 - The rapid pace of technological developments is triggering updates to statutes originally developed in a print-based environment and the quality and completeness of these updates is very uneven.
 - While creating new opportunities, electronic technologies are also creating new tensions about and exacerbate existing concerns with issues such as privacy and censorship.
- CNI must:
 - Develop a political agenda;
 - Draw on policy statements such as those developed by the Association of Research Libraries on access to government information in electronic format, the EDUCOM Code, the Code of Fair Information Practices developed by the computer science community, the Code of Practices for Gateways developed by the National Federation of Abstracting and Information Services, and the anti-censorship principles of the American Library Association; and,
 - Formulate statements expressing the essential principles that are sorely needed both to serve local communities as well as to guide national debate.

CODES, POLICIES, AND PRACTICES
THAT CLARIFY RIGHTS AND DUTIES

OBSERVATIONS AND RECOMMENDATIONS

Develop a political agenda and lobby

- CNI needs to develop a strong political agenda; this is basic to CNI's mission. Through a formal process that takes input from all constituent groups, a statement of CNI policies should be developed. Positions on national issues can be used by members as models for legislation at the state level.
- CNI needs to monitor both legislation and professional association positions to assure that the CNI perspective is considered.
- CNI needs to coordinate the lobbying efforts and the telecommunications task forces of the three member organizations. CNI should be the focal point for the three sponsoring associations to work out common positions on critical areas.
- In the policy area, CNI needs to focus very strongly on network based information and the unique issues that are relevant there.
- CNI should feed its ideas into the dynamic process of information policy review being undertaken by the National Commission on Libraries and Information Science.
- CNI should organize educational organizations for effective lobbying on government information policy.
- CNI should develop joint efforts and sponsorship of codes or model policies.
- CNI should take as its policy foundation the Bill of Rights, emphasizing protection of access to information and not constraints due to managerial requirements or pressures of private enterprise.
- CNI needs to develop broad advocacy for an educationally oriented information policy; we should get faculty and industry representatives involved.

Take positions on specific issues

- CNI should help define what are and are not appropriate uses of the NREN.
- CNI should have a role in determining who will administer and control the NREN.
- CNI should promote and recommend models for copyright, intellectual property, etc. which will facilitate the attainment of an information resource sharing vision for the 90's.
- CNI should promote development of policies, codes and practices which maximize open, low cost access to networked information, which is consistent with the policy that unfettered access to information is in the national good, while at the same time establishing and defining the concept of responsible use.
- CNI should take an active role in articulating those issues related to privatization vs. public utility.
- CNI should encourage the development of a core set of non-competitive, non-proprietary standards for network participants.
- CNI is uniquely suited to developing and advocating use policies for the networks, e.g. advocating use of the

CODES, POLICIES, AND PRACTICES
THAT CLARIFY RIGHTS AND DUTIES

Internet by OCLC.

- CNI should recommend norms for software licensing.
- CNI should develop a code of ethics for information professionals, be they librarians or information technologists.
- CNI should examine how existing policies limit access.
- CNI needs to develop a common position on pricing with particular attention to flat rate versus transaction-driven pricing.



PROFESSIONAL AND USER EDUCATION FOR EFFECTIVE ACCESS TO AND MANAGEMENT OF NETWORKED INFORMATION

Jane Norman Ryland
President
CAUSE

SUMMARY

- Powerful systems lie unused and underused for want of training, and conversely, a small investment up front in a training program can net significant yields in improved productivity and encouraging the effective use of virtually any system.
- Training will be an important element in removing the barriers to the information-rich environment that we all visualize.
- The key questions about training for the proposed National Research and Education Network that should be on the minds of all CNI members are:

- **Who needs training?**

CNI should focus first on the needs of developers of information resources and on faculty, students, staff, and even members of the business community who want to learn how to use the Network.

- **What kind of training is needed?**

CNI should organize a public education effort to ensure that the public is informed of the potential for access to networked information and of the advantages of using the Network. Work is needed as well on learning how to use workstations, how to use local networks and to access the Network through them, and how to navigate to and then search actual databases.

- **What is the role of the local institution versus CNI?**

A challenge at the local level will be for organizational units that are affected by the Network to work together in mounting a local training program. CNI could assist these efforts by focusing on standards that make access to networked information resources easier and more comprehensible, developing a model curriculum, developing service guidelines, and providing seminars for senior administrators.

- CNI should also:
 - Encourage the development of model professional education projects;
 - Prepare white papers on key information policy issues; and,
 - Publish articles to foster a better understanding of the various professional cultures involved in implementing access to networked information.

PROFESSIONAL AND USER EDUCATION
FOR EFFECTIVE ACCESS TO AND
MANAGEMENT OF NETWORKED INFORMATION

- First CNI needs to examine the skills required of professionals in the information management environment and then develop a model which could be used to establish training components.
- CNI should build upon and strengthen the training programs already developed by ARL, EDUCOM, and CAUSE.
- CNI should promote "sharing" of access to members' workshops.
- Model curricula and training packages can be devised and promoted by CNI, or CNI can serve as a clearing-house for such materials.
- Groups targeted by CNI for training might include CNI members and their campus trainers.
- Training and education are vital for networked information; however, these activities should be pursued at the local level.
- CNI should focus on education, in terms of informing people about what networked information is, rather than on training, e.g. teaching users how to connect to or search a particular system.

Public relations

- CNI should use publicity to build long term support for the NREN and other network projects. The publicity needs to prepare both legislators and the general public long before actual legislation is introduced.
- The majority of faculty are totally unaware of these critical network issues. CNI should establish its credibility with a very visible campaign which includes publications, video broadcasts, etc.

Rely on an effective interface

- CNI should promote adherence to standards and development of systems and interfaces that minimize the need for training.
- The long range goal should be to encourage easy to use interfaces which require little in the way of documentation. CNI should work with researchers and librarians to develop a document aimed at helping developers of user interfaces to create effective and consistent programs.

Miscellaneous

- CNI should pursue discussions with accrediting agencies with regard to setting standards of institutional access to networked information.
- CNI should educate its various constituencies through the development and publication of positions, white papers, and guidelines.
- CNI should provide some models for campuses as to how information technology organizations and libraries really work together in the user education arena.

ARL / CAUSE / EDUCOM
Coalition for Networked Information

PROFESSIONAL AND USER EDUCATION
FOR EFFECTIVE ACCESS TO AND
MANAGEMENT OF NETWORKED INFORMATION

- A high priority is to obtain the growing resources needed to educate a growing community of users of a rapidly growing technology.



CONCLUDING OBSERVATIONS AND RECOMMENDATIONS

- CNI needs to consider how permanent it should be and at what point its long-term objectives should be incorporated back into its parent organizations. Whether CNI should involve itself in operational activities like training courses and publications or rather should remain project, issue, and task oriented needs to be discussed.
- CNI needs to develop a dialogue on fees for information and to develop an understanding of all the issues between publishers, libraries, networks, information providers AND between these groups and their constituencies, e.g. faculty.
- CNI should take advantage of the expertise in its founding organizations.
- CNI should review its mission statement with greater sensitivity toward issues of organizational control and institutional diversity.
- It seems vital that CNI concentrates on specific products and cost-benefits. The vision of NREN is vital and large; without it, many of our efforts remain fragmentary and poorly focused. We need the network, not another inner-directed organization.
- It is clear that the breadth of possible CNI activities is overwhelming. Given its limited resources, CNI should not do what other organizations are doing; rather, CNI should do what other organizations cannot do given their mission, focusing on such high level activities as advocacy, coordination, championing standards, and education.
- Given the larger number of institutions than anticipated that have joined CNI, we should be able to implement some of the priorities we have identified by directly financing the costs of some projects.
- The most important role of CNI is the unprecedented coalescence of these groups.
- CNI should focus its priorities on what is achievable now.
- Specific objectives of accomplishment for CNI should be established and enunciated.
- CNI's functions of collecting information, synthesizing, evaluating, and developing models should be carried out by the following activities: promoting the concept of networked information, promoting the wise use of networked information, and identifying areas of needed knowledge base, policy development, and implementation methodologies. In addition, CNI must be a significant player in influencing the direction of the development of the national network.
- CNI needs to emphasize the use of the network for access to information resources in support of teaching, learning, and administration and not just for access by researchers.
- CNI needs to be action-based.
- CNI could benefit from having librarians from the fields of law, medicine, music, and technical services involved.