

**The Internet an International Public Treasure: A Proposal for the Creation
of a Prototype to Manage the Internet's Infrastructure**

Ronda Hauben

(Note: The following proposal was written and submitted to the US government before they created ICANN. The proposal is based on my research about how the Internet was created. The proposal describes an operational process to create a prototype for an international and public management structure for the Internet's infrastructure. A preface to the proposal and the proposal itself follows. While the proposal was originally addressed to the US government in 1998, the WSIS process has put on the agenda that there be an international process to determine the future form of a management structure for the Internet's infrastructure. I welcome comments and discussion on the proposal, as well as discussion toward its implementation.*)

A - The Preface

In testimony before the Subcommittee on Basic Research of the Committee on Science of the U.S. Congress on March 31, 1998, Robert Kahn, co-inventor of TCP/IP, indicated the great responsibility that must be taken into account before the U.S. Government changes the administrative oversight, ownership and control of essential aspects of the Internet that are part of the Domain Name System (DNS) and other aspects of the Internet's infrastructure.

Kahn indicated that "the governance issue must take into account the needs and desires of others outside the United States to participate." His testimony also indicated a need to maintain "integrity in the Internet architecture including the management of IP addresses and the need for oversight of critical functions." He described how the Internet grew and flourished under U.S. Government stewardship (before the privatization - I wish to add) because of 2 important components. 1) The U.S. Government funded the necessary research and 2) It made sure the networking community had the responsibility for its operation, and insulated it to a very great extent from bureaucratic obstacles and commercial matters so it could evolve dynamically.

He also said that "The relevant US government agencies should remain involved until a workable solution is found and, thereafter retain oversight of the process until and unless an appropriate international oversight mechanism can supplant it."

And Kahn recommended insulating the infrastructure functions which are critical to the continued operation of the Internet so they could be operated "in such a way as to insulate them as much as possible from bureaucratic, commercial and political wrangling."

When I attended the meeting of the International Forum on the White Paper (IFWP) in Geneva in July 1998, which was a meeting set up by the U.S. Government to create the private organization to take over these essential infrastructure functions in September 30, 1998, none of the concerns that Kahn raised at the Congressional hearing in March 1998 were indicated as

concerns by those rushing to privatize these critical functions of the global Internet. I wrote a report which I circulated about the political and commercial pressures that were operating in the meeting to create the Names Council that I attended. (See "Report from the Front", Meeting in Geneva Rushes to Privatize the Internet DNS and Root Server Systems". The URL is <http://www.ais.org/~ronda/new.papers/dns-icann-controversy.txt>)

But what is happening now with the privatization plan of the U.S. Government involves privatization of the functions that coordinate the International aspects of the Internet and thus the U.S. Government has a very special obligation to the technical and scientific community, and to the U.S. public and the people of the world, to be responsible in what it does.

A few years ago I met one of the important pioneers of the development of time-sharing, which set the basis for the research creating the Internet. This pioneer, Fernando Corbato, suggested I read a book "Management and the Future of the Computer" which was edited by Martin Greenberger, another time-sharing pioneer. The book was the proceedings of a conference about the Future of the Computer held at MIT in 1961 to celebrate the centennial anniversary of MIT. The British author, Charles Percy Snow made the opening address at the meeting and he described the importance of how government decisions would be made about the future of the computer.

Snow cautioned that such decisions must involve people who understood the problems and the technology. And he also expressed the concern that if too small a number of people were involved in making important government decisions, the more likely it would be that serious errors of judgment would be made.

Too small a number of people are being involved in this important decision regarding the future of these strategic aspects of the Internet and too many of those who know what is happening and are participating either have conflicts of interest or other reasons why they are not able to consider the real problems and technological issues involved. (About the 1961 conference, see chapter 6 of Netizens at <http://www.columbia.edu/~rh120>)

What is happening with the process of the U.S. Government privatization of the Domain Name System is exactly the kind of danger that C.P. Snow warned against.

I have been in contact with Ira Magaziner, Senior advisor to the U.S. President on policy with these concerns and he asked me to write a proposal or to put my concerns into some "operational form." The following proposal is my response to his request.

B - The Proposal

Toward an International Public Administration of Essential Functions of

the Internet - The Domain Name System, IP System, Root Server System, etc.

Recently, there has been a rush to find a way to change significant aspects of the Internet. The claim is that there is a controversy that must be resolved about what should be the future of the Internet's Infrastructure (ie. the Domain Name System IP system, Root Server System etc).

It is important to examine this claim and to try to figure out if there is any real problem with regard to the Internet's infrastructure that has to be solved.

The Internet is a scientific and technical achievement of great magnitude. Fundamental to its development was the discovery of a new way of looking at computer science.(1) The early developers of the ARPANET, the progenitor of the Internet, viewed the computer as a communication device rather than only as an arithmetic engine. This new view, which came from research conducted by those in academic computer science, made the building of the ARPANET and then the Internet possible.(2) Any changes in the administration of essential functions of the Internet need to be guided by such a scientific perspective and principles, not by political or commercial pressures. It is most important to keep in mind that scientific methods are open and cooperative.

Examining the development of the Internet, an essential problem that becomes evident is that the Internet has become international, but the systems that allow there to be an Internet are under the administration and control of one nation. These include control over the allocation of domain names, over the allocation of IP addresses, over the assignment of protocol numbers and services, as well as control over the root server system and the protocols and standards development process related to the Internet. These are currently under the control and administration of the U.S. Government or contractors to it.

Instead of the U.S. Government offering a proposal to solve the problem of how to share the administration of the DNS, which includes central points of control of the Internet, it is supporting and encouraging the creation of a new private entity that will take over and control these essential Internet functions. Such a private entity will magnify many thousands fold the commercial and political pressures and prevent solving the genuine problem of having an internationally shared protection and administration of the Internet's infrastructure, including the domain name system, root server system, IP number allocations, Internet protocols, etc.

Giving these functions over to a private entity will make it possible for these functions to be changed and for the Internet to be broken up into competing root servers, etc. These essential functions make the network of networks one Internet rather than competing networks with competing root server systems, etc.

What is needed is a way to protect the technology of the Internet from commercial and political pressures, so as to create a means of sharing the administration of the key internet infrastructure functions.

The private organization that the U.S. Government is asking to be formed is the opposite of protecting the Internet. It is encouraging the take over by a private, non accountable corporate entity of the key Internet functions and of this International public resource.

In light of this situation, the following proposal is designed to establish a set of principles and recommendations on how to create an international cooperative collaboration to administer and protect these key functions of the Internet from commercial and political pressures. This proposal is to create a prototype for the kind of international cooperation and collaboration needed to control and support the administration of these key Internet functions.

I. The U.S. Government is to create a research project or institute (which can be in conjunction with universities, appropriate research institutes, etc.) The goal of this project or institute is to sponsor and carry out the research to solve the problem of what should be the future of the DNS and its component parts including the root server system.

II. The U.S. is to invite the collaboration (including funding, setting up similar research projects, etc.) of any country or region interested in participating in this research. The researchers from the different nations or regions will work collaboratively.

III. The researchers will as much as possible utilize the Internet to carry out their work. Also they will develop and maintain a well publicized and reachable online means to support reporting and getting input into their work. They should explore the use of Usenet newsgroup, mailing list and web site utilization, and where appropriate RFC's etc.

IV. With clearly set dates for completion, the collaborative international research group will undertake the following:

- 1) To identify and describe the essential functions of the internet's infrastructure that need to be maintained. (The RFC's or other documents that will help in this need to be gathered and references to them made available to those interested.)
- 2) To examine how the Internet and then how the DNS system and root server system, ip sytem, etc. are serving the communication needs of the diverse communities and users of the Internet, which include among others the scientific community, the education community, the librarians, the technical community, Governments (National as well as local), the university community, the art and cultural communities, nonprofit organizations, the medical community, the business community, and most importantly the users whoever they be, of the Internet.
- 3) To produce a proposal at the end of a specified finite period of time.

The proposal should include:

- a) an accurate history of how the Internet developed and how the Internet's infrastructure developed and why.

b) a discussion of the vision for the future of the Internet that their proposal is part of. This should be based on input gathered from the users of the Internet, and from research about the history and development of the Internet.

c) a description of the role the Domain Name System plays in the administration and control of the Internet, how it is functioning, what problems have developed with it.

d) a proposal for its further administration, describing how the proposal will provide for the continuation of the functions and control hitherto provided by U.S. Government agencies like NSF and DARPA. Also, problems for the further administrations should be clearly identified and proposals made for how to begin an open process for examining the problems and solving them.

e) a description of the problems and pressures that they see that can be a danger for the administration of the Internet's infrastructure. Also recommendations on how to protect the administration from succumbing to those pressures. (For example from pressures that are political or commercial.) In the early days of Internet development in the U.S. there was an acceptable use policy (AUP) that protected the Internet and the scientific and technical community from the pressures from political and commercial entities. Also in the U.S., Government funding of a sizeable number of people who were the computer science community also protected those people from commercial and political pressures.

f) a way for the proposal to be distributed widely online, and the public not online should also have a way to have access to it. It should be made available to people around the world who are part of or interested in the future development of the Internet. Perhaps help with such distribution can come from international organizations like the ITU, from the Internet Society, the IETF, etc.

g) comment on what has been learned from the process of doing collaborative work to create the proposal. The proposal should identify as much as possible the problems that developed in their collaborative efforts. Identifying the problems will help clarify what work has to be done to solve them.

h) It will be necessary to agree to some way to keep this group of researchers free from commercial and political pressures -- government funding of the researchers is one possible way and maybe they can be working under an agreed upon acceptable Use Policy for their work and funding. (in the past an Acceptable use policy has made such collaborative work among researchers from different nations possible.)

This proposal is an effort to figure out what is a real way to solve the problem that is the essential problem in the future administration of the Internet. If the principles and prototype can be found to solve this problem, they will help to solve other problems of Internet administration and functioning as well.

Notes:

(1) See Michael Hauben, "Behind the Net: The Untold Story of the ARPANET and Computer Science", in "Netizens: On the History and Impact of Usenet and the Internet", IEEE CS Press, 1997, p. 109. See also "Internet, nouvelle utopie humaniste?" by Bernard Lang, Pierre Weis and Veronique Viguie Donzeau-Gouge, "Le Monde", September 26, 1997, as it describes how computer science is a new kind of science and not well understood by many. The authors write: "L'informatique est tout a la fois une science, une technologie et un ensemble d'outils....Dans sa pratique actuelle, l'introduction de l'informatique a l'ecole, et malheureusement souvent a la'universite, est critiquable parce qu'elle entretient la confusion entre ces trois composantes."

(2) Ibid.

* The proposal submitted to the U.S. government is at the NTIA web site:
[www.ntia.doc.gov/ntiahome/ domainname/proposals/hauben/hauben.html](http://www.ntia.doc.gov/ntiahome/domainname/proposals/hauben/hauben.html)
[www.ntia.doc.gov/ntiahome/ domainname/proposals/hauben/hauben-fr.htm](http://www.ntia.doc.gov/ntiahome/domainname/proposals/hauben/hauben-fr.htm)

I have made some minor corrections in the version here.

Submitted by Ronda Hauben

Co-Author of: "Netizens: On the History and Impact of Usenet and the Internet" published by the IEEE Computer Society Press, 1997.