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JUL 25 1995

From: Rick Crawford <crawford@cs.ucdavis.edu>  
To: A16.A16(RM-8653, RM-8648)  
Date: [REDACTED]  
Subject: Comments on NII BAND petition

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF SECRETARY

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554

In the Matter of )  
)  
Allocation of Spectrum in the 5 GHz Band ) RM-8653  
To Establish a Wireless Component of the )  
National Information Infrastructure )

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In the Matter of )  
)  
Petition for Rulemaking to Allocate ) RM-8648 the 5.1 - 5.35 GHz Band and Adopt )  
Service Rules for a Shared Unlicensed )  
Personal Radio Network )

Comments of Richard H. Crawford

I submit these comments to the petition for rulemaking filed by Apple Computer, Inc. ("NII Band Petition") and by the WINForum ("WINForum Petition") in the above referenced matters. I am filing as a private citizen, and as a computer researcher who has published peer-reviewed articles on information security and the social impacts of networking technologies.

I have no financial interest in Apple Computer; I do not even use their equipment. Nevertheless, I find the vision embodied in Apple's NII Band Petition to be vastly superior to that of the WINForum Petition, when the overall benefits to society are considered.

The WINForum Petition is another in an endless series of proposals based on private, for-profit concerns. Any benefits to the public good that might accrue from granting the WINForum Petition would be in the nature of "trickle-down" benefits. As such, it is highly unlikely the benefits would be distributed equitably; instead, the bifurcation of our society into the Info-rich and the Info-poor would be exacerbated thereby.

The contrast between Apple's NII Band Petition and the WINForum Petition is striking. In an era when previous FCC licenses have become sinecures, and new segments of spectrum are auctioned off to the highest bidders for exclusive licensing, it is imperative that some portions of the spectrum be reserved for public uses, rather than subordinating all our diverse and fundamentally incommensurable values to monetary considerations.

I find the Comments filed 10 July 1995 by AT&T to be disingenuous. In particular, the FCC should be far less concerned that its actions might "devalue" certain private goods (existing PCS licenses), and far more concerned that its pattern of actions to date has "already" devalued vitally important public goods. With all due respect, the FCC has, perhaps unavoidably, been a party to the internalization of benefits, and the externalization of costs onto society at large. The FCC now has an opportunity to mitigate those detrimental externalities by issuing a notice of proposed rulemaking in support of the NII Band.

By reducing the cost of a high-bandwidth "last mile" connection to a NII, the intermediate-distance NII Band would directly benefit schools, libraries, small businesses, rural communities, Native Americans, and individual citizens. By ensuring "bi-directional" access, many more people would be empowered to act as information "producers", not merely passive consumers. The benefits  
— diversity of content, freedom of choice, and genuine economic competition  
(vs. oligopolistic joint ventures and strategic alliances) — would be immense.

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To serve the public interest, it is incumbent on the FCC to promote such a genuinely-Free Speech zone, a "public" space for discourse unconstrained by one's ability to purchase or lease spectrum.

An objection could be raised that such a scheme inevitably would lead to a "Tragedy of the Information Commons". On the contrary, hardware-imposed rules (e.g. spread spectrum techniques) could assure "equitable" sharing of the frequencies, thereby obviating that common (albeit misplaced) criticism. In fact, evidence to date tends to implicate privately "owned" sinecures (i.e., broadcast licenses) as zones of common tragedy, in which an informed citizenry and the free flow of information have been sacrificed to the tyranny of profit maximization. Traditional profit-oriented mass media gatekeepers have performed poorly in promoting a healthy and free flow of information. The FCC must encourage new paradigms of communication for the public good.

I fully support the following statements in Apple's original petition:

-----  
"The rules governing the NII Band must assure that all devices retain an equitable right to access and share the spectrum resource. In particular, they must prohibit any ... requirement (or exceptional priority) for centralized 'gatekeepers.'  
...  
... users must be free ... to communicate without obtaining the approval of, or deferring to, any type of hegemonic controller."  
-----

Such minimal rules governing the NII Band could help reduce the widening gaps between our nation's Info-haves and Info-have-nots.

Finally, the FCC should consider the NII Band in the light of the values that motivated the now-defunct Fairness Doctrine. Fairness and communications "equity" are values that implicitly underpin our First Amendment rights. Yet the objections stemming from conventional implementation of the Fairness Doctrine are well known -- e.g., to require a Right of Reply in the print media is seen as a government infringement on the freedom of those who own a particular press, and to require Equal Time on a broadcast channel becomes problematic because rarely are there only two sides to a controversy.

The NII Band has the potential for providing the benefits of the Fairness Doctrine without incurring its liabilities. If the NII Band's implicit requirement for equitable and bi-directional communications is honored, it will promote affirmative Equal Rights of communication access, regardless of race, gender, or monetary resources.

The FCC should recognize that the NII Band offers the best opportunity in years to promote a genuine and bi-directional free marketplace of ideas, a forum that is desperately needed to improve the degraded and impoverished discourse that now afflicts American society.

For various reasons -- including, but not limited to -- those stated above, I support the petition for rulemaking filed by Apple Computer, Inc., and oppose the petition filed by the Wireless Information Networks Forum.

Let me also take this opportunity to thank the FCC for accepting comments filed via email.

Respectfully submitted,

Richard H. Crawford  
Computer Science Dept., Univ. of Calif, Davis.

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Davis, CA 95616

24 July, 1995

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# Congress of the United States

## House of Representatives

Washington, DC 20515

July 14, 1995

Mr. William Caton, SEC  
Federal Communications Comm.  
1919 M St NW  
Washington, D.C. 20554

Dear Mr. Caton:

I am writing to convey the opinion of one of my constituents. Charles H. Logan wrote to my office after having read of the Apple Computer petition regarding a large block of frequencies from which any American could benefit, free of charge. The article also indicated that the public opinion poll had been completed, but Mr. Logan and I hope that he can still offer his viewpoint.

I have included a copy of Mr. Logan's letter in the hopes that you will still accept comments. Mr. Logan strongly supports the Apple Petition. He believes that it is right to serve the public interest because the government exists for that sole purpose. I hope that, at this late date, you can still take Mr. Logan's insight into consideration.

Thank you for your help and if you have any questions, please feel free to contact me or my staff at (202) 225-2076.

Sincerely,

SAM GEJDENSON  
Member of Congress

SG/jm

RM-8653  
~~RM-8648~~  
PMB  
Auction  
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SAM GEJDENSON  
2D DISTRICT  
CONNECTICUT

COMMITTEE ON  
INTERNATIONAL RELATIONS  
RANKING MEMBER  
SUBCOMMITTEE ON  
INTERNATIONAL ECONOMIC  
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ASIA AND THE PACIFIC

COMMITTEE ON RESOURCES  
SUBCOMMITTEE ON  
FISHERIES, WILDLIFE  
AND OCEANS  
SUBCOMMITTEE ON  
WATER AND POWER RESOURCES

COMMITTEE ON  
HOUSE OVERSIGHT

RM-8648  
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344 Mansfield Rd., U-68  
Storrs CT 06269-2068

JUL 25 '95

July 12, 1995

FEDERAL COMM. COMMISSION  
OFFICE OF THE  
SECRETARY

The Honorable Sam Gejdenson  
U.S. House of Representatives  
1410 Longworth Building  
Washington DC 20515

RM - 8653  
RM - 8648

Dear Mr. Gejdenson:

I am writing to solicit your support for the proposal by Apple Computer that the FCC set aside a large block of frequencies that any American could use, without fee. I don't know what role Congress is playing in this idea at this point, but according to today's newspaper, the FCC has just finished collecting public comment. Since I had no prior opportunity to make any comment to FCC, I am hoping that you will convey my sentiments to them, as well as make note of them for the time that Congress does become involved in the issue.

The Apple proposal requests 300Mhz be set aside for community-wide broadcasting. A counter-proposal by telephone companies suggests 250 Mhz with a very limited range, suitable for only within-building broadcasting. Those restrictions would help the phone companies protect themselves from competition.

The public interest, as opposed to the interest of the phone companies, would be served better by the Apple proposal, which would allow unlimited innovation and experimentation with new technologies and services. In effect, it would create a small area of air space for the Internet. It is impossible to predict the advances this could lead to, and that is precisely why it should be as broad and as unrestricted in form as possible. Do not let the phone companies control or restrict this exciting new realm of communication and invention.

Congress may be worried that the federal government may lose some money by giving away a small part of the spectrum instead of auctioning it off. I think that is looking at it backward. The spectrum should be seen as belonging, originally and inherently, to The People [or to nobody, which is another way of saying the same thing]...not to the government. Reserving 300 Mhz for unlicensed public use would be giving back to the public what is rightfully its in the first place. The federal revenues that would be "lost" would remain in the hands of taxpayers, who can decide for themselves what is the best and highest use of that money.

Sincerely,

Charles H. Logan

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From: Paul Waldo <pwaldo@rmii.com>  
To: A16.A16(RM-8648)  
Date: [REDACTED]

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF SECRETARY

In the Matter of

Adopt (RM-8648)      Petition for Rulemaking to Allocate Service Rules for a Shared Unlicensed      the 5.1 - 5.35 GHz Band and Personal Radio Network

I beleive that this proposal would be counter-productive to the FCC's goal. This proposal would place the frequencies in the hands of corporations, rather than the general public. Please consider adopting RM-8653 instead. Thank you for your consideration.

Paul Waldo  
1825 Westmoreland Rd.  
Colorado Springs CO 80907

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List A B C D E

From: John [Francis] Stracke <francis@tigana.microserve.com>  
To: A16.A16(RM-8648)  
Date: [REDACTED]  
Subject: Wireless NII

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JUL 25 1995

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF SECRETARY

John Stracke  
10 Falcon Ct.  
Mechanicsburg, PA 17055  
717-691-0507 francis@io.com http://www.io.com/~francis

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Qualifications: I am a software engineer specializing in network communications. I am employed with InSoft, Inc., but I do not speak for InSoft.

Do you accept comments on comments? My comments on the comments on the Apple wireless NII petition (comments being quoted marked with >):

>AMERICAN RADIO RELAY LEAGUE

[...]

>"Apple envisions a radio service occupying 300 MHz of valuable  
>microwave spectrum which has no regulation at all, save for some vague  
>inter-device compatibility based on packet protocols, which will  
>substitute for frequency assignments, coordinated operation, and any  
>medium access or frequency re-use regulation. ...

Well, \*yes\*. Once the protocols are established, they will substitute for the regulation traditionally performed by human intervention.

This does not constitute an abdication of the Commission's responsibility, but a delegation. Rather than individually assign frequencies (traditionally a labor-intensive process), the Commission can now leverage technology to perform the spectrum allocation automatically, when and as needed.

ARRL also contends that Apple should define the protocols prior to requesting spectrum. However, the nature of the protocols required may depend on the specific frequencies allocated. For example, as WINForum points out, certain bands are more susceptible to rain fade than others. The industry can create a more efficient protocol if the frequencies are known in advance. Naturally, it would be prudent for the Commission to make the allocation subject to approval of the protocols.

>AT&T

>

>"The Commission should not seriously devalue the spectrum it has  
>already sold or intends to sell by permitting the offering of similar  
>service by parties who paid nothing for use of spectrum.

Why not? Service providers with their own spectrum retain a competitive advantage, in that they can provide more reliable service than those who have to share the public spectrum.

Moreover, if the Commission is bound to protect the value of the earlier parties' investments, then the Interstate system should never have been built, since it devalued the railroad right-of-ways.

>"Apple explains that its NII band permits only what it calls  
>'connectionless information transport' and that there is no role for  
>'centralized gatekeepers' or a 'hegemonic controller'. The WINForum  
>petition does not contain these specifications. While SUPeRNet will  
>often be used for connectionless packet data transmission, some  
>connection protocols and centralized control aspects may also be  
>required in order also to permit interactive multimedia applications.

This is not a problem. The Apple image of a connectionless NII band is like the connectionless Internet Protocol (IP). The WINForum connection-based system is like the ISO X.25 protocol. Multimedia is being done over the Internet today, and there are protocols being implemented to improve its quality of service without requiring

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connections. Very little is being done over X.25 at all.

One major problem with connection-based protocols is that every switch or router in the network needs to store state for every connection passing through it. This is very CPU- and memory-intensive, which is why telephone switches are so fabulously expensive. With a connectionless protocol, the routers consider each packet separately. When connections are needed, a connection protocol can be implemented on top of the connectionless protocol, via software in the endpoints.

>MICROSOFT

[...]

>The allocation approved by the Commission should have a minimal set of  
>rules attached to it and must be flexible enough to accommodate both  
>channelized access and broadband spread spectrum techniques.

There's a point at which flexibility becomes more a liability than an asset. Spread spectrum and channelized usage are at odds with each other; a system supporting each could be designed, but it would be far more complex, which means more money and more bugs.

>similar steps."

>NORTHERN AMATEUR RELAY COUNCIL OF CALIFORNIA

>

>"They are asking permission to create a proprietary network without  
>paying for it.

No, they are asking to create an open network where any manufacturer can create an endpoint which anybody can use.

> Other wireless carriers have paid unprecedented sums  
>for our precious spectrum. If they take the lead role in defining a  
>transmission system, it would then be patented and licensed to other  
>users.

Is it within the Commission's power to mandate that the protocol, and perhaps the general design of the transceivers, be patent-free?

>BRUCE PERENS

>

>"Apple states that the operating conventions and rules for the NII  
>Band should be developed by the information industry. They ignore that  
>community radio networks have been operated for 15 years by the  
>Amateur Service, and that many of the problems of operating such  
>networks have already been dealt with by Radio Amateurs.

One might point out that the problems of an amateur network do not necessarily scale to a production network. The Internet has learned this lesson painfully over the last several years.

>SOUTHERN CALIFORNIA REPEATER AND REMOTE BASE ASSOCIATION

[...]

>"The petitioner indicates that the expected cost of the devices for  
>this band will place them well within reach of individuals with even  
>modest incomes. The potential for these devices to be sold by the  
>local computer superstore along with every computer as an inexpensive  
>way to gain access to the digital network is a scary thought.

Why? What is wrong with citizens having easy access to the public spectrum? Is it simply because, once inexperienced users start coming to the table, the experienced users will see their culture breaking up and their meeting places trampled by the new hordes? That is "exactly" what has happened to the Internet, and we're getting used to it.

There is one requirement which this points up: if the spectrum becomes overused, there must be a way to expand it. Thus, the protocols developed should be able to adapt to use available spectrum, without requiring hardware upgrades.

Thank you for your time.

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/=====\
|John (Francis) Stracke | http://www.io.com/~francis |
|francis@tigana.microserve.com |=====|
|Power Mac w/PPP | The problem with any unwritten law is that |
|My Mac, my opinions. | you don't know where to go to erase it. |
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