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"Information Services: Who Is Going to Provide Them?"

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**MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
COMMUNICATIONS FORUM**

**"Information Services: Who Is Going to Provide Them?"**

**April 25, 1991**

**Seminar Notes**

**Prof. Russell Neuman, Director M.I.T. Audience Group**

**Mr. Gerard Salemme, House Subcommittee on Telecommunications & Finance**

**Mr. Paul R. Cianelli, New England Cable Television Association**

**Mr. Daniel P. Behuniak, Bell Atlantic**

**Mr. Jules Tewlow, Independent Consultant**

**Mr. Timothy J. Regan, Corning Incorporated**

**Elizabeth H. Prodromou, M.I.T., Rapporteur**

This session was devoted to the topic of "Information Services: Who Is Going to Provide Them?". Prof. Russell Neuman introduced the topic and the speakers. He noted that one of the issues which would be discussed around the topic would relate to whether there should be public regulation over the provision of information services. Neuman gave brief biographical sketches on each of the speakers. Gerald Salemm is Senior Telecommunications Policy Analyst for the U.S. House of Representatives Subcommittee on Telecommunications and Finance. Paul Cianelli joined NECTA in 1975 as general counsel. Daniel Behuniak, at the time of divestiture, was put in charge of Bell Atlantic's regulatory matters and, in that capacity, has been dealing with the introduction of new services and with the telecommunication industry's reaction to the MFJ. Jules Tewlow, an independent consultant, has served on the American Newspaper Publishers Telecommunications Committee for many years and worked for many years with Lee Enterprises. Now retired, he works as a consultant with the MIT sister program at Harvard, the Program on Information and Policy. Timothy J. Regan is Director of Public Policy at Corning, where he's been responsible for analyzing a range of public policy issues affecting Corning's worldwide competitiveness, with special concentration on the issue of optical fibre and its potential role in the broad band world. Each of the speakers will address the question of which of the technologies will dominate in the upcoming broad band world and what is the appropriate structure for arraying them to serve the public interest.

Paul Cianelli opened the discussion. He stated that the cable television industry opposes telephone company entry into the cable television business, and summarized the reasons for their opposition by citing several passages from an internal strategy paper at Bell South: "the guy who gets fiber to the house first owns the house"; "HBO, Showtime, etc. won't need the cable operators to reach their customers"; "the fact that entrenched CATV operators' cash flow is being diverted to mergers and acquisitions and/or programming means that virtually none is being to plant modernization"; "Bell South can cover the cost of providing fibre to the home with revenues from plain old television service (POTS) revenues." Cianelli noted that these quotes suggest some of the strongest reasons for cable t.v. industry opposition to telephone company entry. He explained that the cable industry sees the telcos as mounting an aggressive, well-orchestrated, \$21 million campaign to eliminate federal restrictions, so that they can ultimately become the sole providers of video and information services to customers - one wire to the home, one telco wire.

Cianelli noted that the cable industry is opposed to any form of the telephone company having any control over programming and to any form of video transport inside the telco service area. He observed that, in both cases, the driving concern is unfair competition due to cross subsidization. With a single wire delivering both voice and video, how can the regulators accurately separate the costs of each? According to Cianelli, telcos will end up charging the great bulk of video costs (which will be very high) to telephone rate payers. He maintained that cable has no such opportunity to cross subsidize, so the telcos artificially low costs would enable them to compete unfairly and, eventually, to drive cable out of business.

Cianelli offered some background on the telcos, noting that the history offers insight into the cable industry's strong opposition to telco entry. Seven years ago, on behalf of the U.S. government and the American people, the Justice Department signed the Modified Final Judgement (MFJ). Its cosigner was AT&T, divided now into the new AT&T handling long distance and manufacturing and into seven regional Bell operating companies. These seven companies were split off to provide local telephone service in their respective geographical regions across the U.S. Cianelli pointed out that a key part of the MFJ agreement were several line of business restrictions. The Bell operating companies were restricted from providing long distance service, from manufacturing, and from providing information services (which includes cable television). Cianelli examined why Judge Greene had deemed it necessary to impose these restrictions on the seven companies. He observed that the reasons for the restrictions lay in AT&T's long and colorful history of predatory behavior. Examples of this history included AT&T's refusal, in the 1920's, to release its long distance facilities to fledgling radio broadcasters; in 1949, the Justice Department suit against AT&T for monopolization and conspiracy to restrain trade in the manufacture and distribution of telecommunications equipment; in 1974, the Justice Department suit against AT&T for, once again, using its local monopoly to preclude competition in related markets by denying competing long distance companies access to the local exchange connection (this suit was settled ten years later by the MFJ).

Cianelli commented that Judge Greene viewed the RBOCs' provision of information services as a monopoly provider of the conduit to carry data. The Judge called this situation a bottle neck monopoly.

If a phone company was allowed to own a content business (e.g. its own stock price information service or electronic yellow pages), it would again behave in an anti-competitive manner and would figure out ways to use its control of the conduit to favor its own content business, thereby disadvantaging the other privately owned services. Cianelli noted that the comparative revenues of the telephone industry explain how, in fact, how this anti-competitive objectives could be accomplished. He cited the example of NYNEX alone, whose revenues are the size of the entire cable television industry. The local telephone industry large and highly concentrated (the top ten telcos have 90% of the industry revenue. In his view, the telcos have grown to this huge size in a business environment that differs dramatically from that faced by most other American businesses. The telcos have been granted a monopoly in their local service areas; in turn, they are regulated by a state public utility commission which sets the rates they charge the rate payers.

Cianelli discussed recent moves by the RBOCs, as part of their new vision, to begin rebuilding their existing telephone network by replacing the twisted copper wires with fibre optic cable; this would use them to use the enhanced capabilities of fibre to provide both voice and video services to American homes. "Fibre to the home" became the telcos' rallying cry. He noted that, historically, the telcos have not been able to deliver video because their twisted copper wire was technically unable to carry the large amounts of information necessary to do so. Further, because of both the MFJ restrictions on separation of content and conduit and a 1970 FCC rule prohibiting telcos from owning both telephone and cable in the same community, the telcos were legally prohibited from providing video services. Both of these, especially the FCC rule, was meant to prevent telcos from stifling the development of the then infant cable t.v. industry. Congress reaffirmed this ban with the 1984 Cable Act.

Faced with the above barriers, the telcos began to put into motion some of their greatest strengths: lobbying, government relations, and influencing public opinion. Cianelli observed that the cable t.v. industry itself contributed fuel to the phone companies' fire because operators weren't providing the kind of service that customers expected or desired. In addition, some less responsible companies were dramatically raising rates, at the same time that per subscriber value was increasing rapidly and thereby changing the image of the industry from that of a struggling business to a wealthy one. By 1987, cable penetration had improved to reach 50% of U.S. households.

The above history provides the backdrop for the current debate focusing on elimination of line of business restrictions cited in the MFJ and for the hearing which took place last week before Judge Greene.

Cianelli argued that there are three myths around this debate which must be dispelled. The first myth is that fibre is a proprietary technology owned by the phone company. This is simple not true: fibre is a technology available to anyone and, in fact, the cable t.v. industry today is installing fibre in our systems where it is economically viable. The second myth plays out with the telcos' claim that they will install fibre for voice and data in the telephone networks. Since fibre can carry an almost an infinite amount of information in that tiny strand, they telcos claim that it would make sense for them to carry video since it would be a freebie. The reality is that, even if the phone companies install fibre to carry voice and data in their telephone network, it will be enormously expensive to upgrade that network to carry video. It is not a freebie by any stretch of the imagination, because the system architecture is completely different. The bottom line is that the cost of installing data in the home (whether for voice and data or for video as well) is enormous, with estimates ranging from \$400 billion to \$900. The third myth says that opposition to telco entry into all of these other services consigns the U.S. to becoming a telecommunications third world nation. Cianelli emphasized that the cable t.v. industry is not opposed to a world competitive telecommunications infrastructure. But it doesn't share the telcos' view of world competitiveness. Aside from the economic discussions and technological debates, another larger question looms: whether it is good public policy to concentrate the flow of all information into American households in the hands of a single, huge company regulated by the government. The cable t.v. industry answers "no" to this question.

Behuniak followed, noting from the outset that he agreed with many of Cianelli's substantive remarks but that he disagreed with the comments about the bad acts of the telephone companies. Behuniak observed that the telephone industry is not the one that has to spend \$10 million to clean up its image, and doesn't have groups talking about broken promises like the Ralph Nader teledemocracy project. In terms of the questions about whether or not there should be a sole provider of services or fibre to the house, Behuniak noted his agreement with Cianelli that there should not be one, but maybe two or more. In areas where economic feasibility would dictate only one provider, an option would be

to have cooperation between the cable t.v. and phone companies. Behuniak emphasized that the important thing is to get the facilities that will carry the modern services out there to the public, and stressed that there are opportunities for cooperative work between the telcos and the cable t.v. industry, if the two industries would stop fighting with each other.

In terms of the claim that some make about the proprietary nature of fibre, Behuniak agreed that fibre is not a telephone company proprietary technology. The cable companies are deploying fibre, they have their labs that are working on how to improve the uses of fibre for video, all of which are positive developments. However, with the issue of what constitutes telephone service, Behuniak questioned why video is not part of telephone service. Using the 1940's to 1960's concept of what technology means for telephone, then it is voice - at most, voice and data. But there is no good answer for why the telephone should not have a screen on it or for why video is not part of telephone service.

Behuniak responded to the central question of who will provide information services as follows: ultimately, it will be everyone who is a provider. It will be broadcasters, cable companies, non-profit organizations, and individuals. The telephone network is set up to transmit and to receive information. In the past, that information was what was in people's heads; now, it's what is in people's heads and in computers; in the future, it's going to be data bases going back and forth in a variety of forms. Behuniak turned to a demonstration of the vision created - not by the telephone companies - but by Northern Telecom, a company which at one time opposed lifting the current restrictions but which now favors lifting them. He argued that there is a growing consensus for lifting the restrictions, supported by groups such as the Consumer Communications Industry Association, the telcos themselves, the ACLU, and others, on the grounds the MFJ prevents U.S. companies from entering into efficient economic organization in the U.S. and in the international marketplace. This perspective suggests that it would be far more efficient for cable t.v. and the telcos to work together rather than fighting. In the camp of those who favor lifting the restrictions, he also cited consumer and handicapped group claims that the MFJ results in fewer new telecommunications products and services being deployed to the public.

In Behuniak's opinion, the Northern Telecom vision is an intermediary step toward the open marketplace that would be ideal. The vision shows some of the kinds of services being talked about as part of the open marketplace, and provides a touchstone for future debates. (VIDEO) He closed by noting that the point about having to reconfigure or re-engineer the network is artificially presented by the cable industry, since they would also have to reconfigure to provide the kind of flexibility they are promising to the American public.

Regan opened with the observation that, the issue as currently framed, is wrong. It's not a question of who is going to provide the services. This sort of question ignores history and reality: hardware precedes software. He claimed that the real issue is who is going to build the broad band, two-way, interactive network in America, and when are they going to build it. So, the issues are who and when, and the network can be defined as the IBBN (Interactive, Broad Band Network).

Regan argued that, today in America, we have a bifurcated policy as it applies to local distribution of information. We have the cable industry, which does one-way, video entertainment. We have the telephone industry, which does two-way, narrow band service (basically voice, and maybe a little bit of data). But the laws and the regulations say never the twain shall meet. We shall never have two-way, broad band, video entertainment or video information services, because the two existing entities can not combine to do the other's business.

Turning to the question of why this issue of lifting the current regulations is important, Regan offered two reasons. First, it's not necessarily going to happen unless something changes. Second, we need it. We need the IBBN to maintain our economic well-being over the long term, as a result of increased growth and productivity that will come from the IBBN. He cited Paul Krugman's work, *The Age of Diminished Expectations*, on the centrality of productivity growth to economic well being. A comparison of productivity growth in the U.S. and Japan (INSERT OVERHEADS) showed that U.S. productivity growth is declining over time while Japanese productivity growth is outdistancing the U.S. rate. Although there is no consensus about why U.S. productivity growth is declining, Regan remarked that the solutions for addressing the problem are even more unclear. He shares the perspective of the technological optimists, who believe that the answer lies somewhere with the computing and the communications industries. The logic goes that the combined effect of logarithmic growth in computing power and the ability to interconnect with the IBBN will unleash a competitive burst in America, somewhat like the competitive burst that occurred in the 1920's. In the 1920's, we had the highest productivity growth in the entire century, and it was driven by the automotive industry. Regan claimed

that we haven't yet realized the benefits of computing and communications, but he suggested that we can. The answer depends on figuring out a way to interconnect the two, computers and communications.

Regan discussed where we are in terms of progress toward building the IBBN network. Fibre optics and the deployment of fibre optics are reasonable indicators of where we stand. (INSERT OVERHEADS). The Japanese plan for wiring its country with fibre optics is as follows: the Japanese will provide two-way, broad band distribution to every school, library, public institution, home, and business by 2015 - the plan is called OFL 21 (Optical Fibre Loop for the 21st century). The specifications for the plan were issued last September, bids for the plan were accepted in December, and some vendor selections for the development of fibre optic cable and the interconnect devices have been made.

In the U.S. case, there is no plan. What has been done (INSERT OVERHEADS) is as follows: the telephone network can be broken down into four segments - the interexchange long distance segment, the interoffice, the feeder network, and the distribution and drop. The largest percent of the network (67%) is in distribution and drop. In terms of where we have fibre today, we have the least in distribution and drop, and currently there are no plans to get fibre into distribution and drop. The question is how to get fibre into distribution and drop, the portion of the network called the local loop.

In terms of these issues, Regan emphasized cost, as well as how much and who will pay. He disagreed with Carroll's cost projections, but acknowledged that cost is a central concern nonetheless. The question of who will pay is key; the possibilities include the taxpayer, the rate payer, the shareholder, and the user of the new services. These things must be decided up front before we look for solutions. Another issue is diversity. If the person who is going to build the network is also a monopoly, this raises the question of whether they will discriminate against other people who want to use the network and thereby deny the diversity of views that America treasures (and which have been a pillar of U.S. communications policy since 1934). The next issue is cross subsidies. If the transporter is also a monopoly, this raises the question of whether the transporter (if it controls content) will cross subsidize and enter into unregulated content businesses with revenues generated from monopoly businesses. Finally, there is the question of platform and what we will get out of this particular option. Will the result be a narrow band system, a broad band system that sends video messages two ways? The final question is the rate of deployment, an issue that is made particularly important given Japan's objectives under OFL 21.

The question of directional options was Regan's next topic. He discussed video dial tone, which makes the telephone company the transporter. Telephone companies today are largely transporters; people who use the system control content. The cable system is different; it transports and it controls the content. With the video dial tone, the telephone company would be providing transport for other people. But the telephone company also would be able to do management and control functions; it would be able to put up a menu, to bill people, and to do things that would make the system work. The system also would require that the waiving of the cable t.v. franchise as it would apply to the transport (the telephone company) and to competitive video programmers who might want to use the telephone company system. Regan claimed that, in terms of the issue of the possibility of telephone companies providing transport, there is a lot of consensus in Washington on this. He suggested that the possibility would become a reality, if only the telephone and cable industries would come to closure on it.

The relationship between the various issues and the option of telephone companies becoming a transport can be thought about in terms of projections (INSERT OVERHEADS) about the IBBN. Regan observed that telephone companies say that the network is growing at about 3% per year. In terms of rehabilitating the existing base, the telephone companies are rebuilding the current network at about 2.5% of the network, in terms of access lines. So, if the telephone companies, under a video dial tone option, began deploying glass instead of fibre (in other words, redeploying the money they spend today on copper into glass), this would start the IBBN at no additional cost. That portion of the plan would be fibered at no additional cost to anyone. He maintained that the current deployment of financial resources does not make sense. Under the alternative option, the additional incremental cost would not be an issue. The issue of diversity also is not an issue under the option, since the telephone company would not have any control over content. The issue of cross subsidy is not an issue either; since telephone companies have no control over content, they can not cross subsidize. In terms of platform, the IBBN option provides a narrow band platform. This must be compared, however, to the fact that Japan is going to be there in 2015 that will go both ways with fibre all the way to the home. According to Regan, the use of compression technology could take this narrow band option into a broad band

option. Regan noted that the rate of deployment for the plan would be rather slow, with a forty to fifty year time horizon. The second option is to accelerate depreciation, thereby allowing a telephone company to continue to be in the narrow band business while allowing them to put more fibre in because they could write off the existing plan through accelerating depreciation. This option would cost money, though, and it would be the rate payer that would pay for this. The third option is to allow telco entry. Regan explained that you allow telco entry if you're not satisfied with narrow band and you want to get the conversion to broad band done more quickly. But this would cost more; the shareholder or the user of the new services would pay. Under this scenario, diversity is an issue because the telephone companies would be in content and therefore cross subsidies would be an issue. The platform would be a broad band platform and the rate of deployment would be 50% of the homes in the year 2020.

Given all of these possible options, Regan suggested that we should compromise. Washington is like a PAC gridlock, with all the interested parties at loggerheads. We should try to figure out a way to get the ball rolling while everything else sorts itself out. The way we do that is to agree on what we can agree on, and that's video dial tone. So, we go ahead and do it. But in addition to that, to get the innovation started to get this technology off and deployed, we should do a grand technology trial. We have to recognize the reality that we're going to have to devise new customer premise equipment and interactive video equipment, new transmission equipment, etc. This stuff doesn't have to be invented. It's available, but it has to be engineered. We're going to have to devise new services. In Regan's view, the way to do this is to allow a portion of the network to be experimented with. The starting point is to set aside about 10% of the telephone company subscribers, and then let the phone companies provide the services to them if they do one additional thing: provide a platform for everybody else to come along and use - cable companies, et al. Another possibility would be to let the cable companies compete with the telephone companies in that same ten percent. In that sort of a situation, the cost is passed on to the shareholder (the telephone company) if it's a failure; if it's a success, the cost would be passed on to the user. This would provide an experiment to test out some of the legitimate public policy concerns about cost, diversity, and cross subsidies.

Tewlow opened by noting that the newspapers frequently use two phrases when discussing today's issues - level playing field and no cross subsidies. He observed that there are similarities on the information issue between the telcos and the newspaper industry. First, they are both in the classified ad business. One has yellow pages, which are classified, and the other has classified ads on a daily basis. Second, they have both had local monopolies. The newspaper industry, generally, does not enjoy this anymore and, to some extent, the local monopolies of the telcos are being diluted.

Having said all this, Tewlow summarized the issue between the two parties as, simply put, money. In 1989, the newspaper industry had about \$12 billion of classified ad revenues. At the same time, the telcos (not only the RBOCs, but industry wide) had about \$8.3 billion. So, we're talking about a \$20 billion market that both the telcos and the newspaper industry have the potential to deal with. When classifieds take on an electronic form into the home, then the money stakes are even higher. He emphasized that the newspapers are very dependent on classifieds for their well being, so that's why they are reacting so strongly to the telcos' potential intrusion into this market. Driving home this point, Tewlow cited statistics. In 1960, 79% of the total ad revenues was local ads, with 22% being classifieds. By 1989, the total was 90%, of which 38% was classified. The stakes are billions of dollars.

In terms of the telcos being in or out of the classified business with electronic delivery to the home, Tewlow noted that he does not think this is a bad possibility, with a few qualifications. The information company that will carry their yellow pages information should be far removed from their main base of operation. He remarked that, under the MFJ as it currently stands, they can transmit and sell information in someone else's territory, providing it's not over their own lines. In his view, there exists ample space for the newspaper industry to cooperate, and they must cooperate in order to survive. What is missing now is the element in the home. He closed by reiterating that, in his opinion, what the issue really can be reduced to is money.

Salemme began by noting that the previous speakers had provided the audience with some insight into the diversity of public policy issues that decisionmakers in Washington must deal with. These issues, however, have billion dollar interests on each side, and this fact makes the issue all the more complicated. These interests are closely guarding their niche, billion dollar markets; this makes it very difficult for public policy to be developed around them, since each of them is large enough to paralyze the process and to stop legislation from going through. Their ability to stall the process has undermined public policymakers over the past two decades in their efforts to develop a long-term policy

able of capturing the changes in technology and in the marketplace. In Salemme's view, the '34 Communications Act has served well to give the principles of universal service, diversity, and localism. But it's time to build on and modify this foundation, by recognizing new competition. The act also must change by recognizing that the current platform must be expanded in a way that does not result in a balkanization of the number of private networks all trying to interconnect and to provide different services for different levels of income users. Instead, new policy must build on the public switch network mentality that was provided by the AT&T motto of universal service. It is especially difficult to formulate new policy not only because of the size of the groups and the diversity of interests on each side, but because there is really very little grass roots constituency around the subject. Most consumer groups oppose anything that has the potential to increase, for any period of time, the local basic rate that a consumer will have to pay for telephone service. Therefore, these groups take a narrow, parochial view of a telephone company investment that we might say is necessary to generate the kind of public switch network for future uses.

What we have been trying to do on the SubCommittee is to try to create an environment where these issues can be viewed and examined by the parties in a way that lets us move beyond the narrow interests of each of the groups. This would allow us to get past the current headbutting between interests only trying to protect their own feeding ground. We have to take that step, we have to take that initial hit in order to move forward; but we have to raise the awareness of a constituency that does not yet exist. Salemme noted that, if we can get past the existing paralysis to provide services along a model similar to the one articulated by Regan, it will be possible to create opportunities for the network and for future, undeveloped applications opportunities.

Turning to the question of why the paralysis has not been unbreakable until now, Salemme argued that people don't recognize the realities underlying the existing revenues pictures. The goal should be to move away from the rhetoric and to take away the one thing that, in Salemme's opinion, is currently in place: a legitimate fear of the telephone company. The telephone companies have had a history in which there have been misallocations, cross subsidies, etc. These companies are big and, in many cases, can cause problems that are fears for potential competitors, joint venture partners and, clearly, to consumers. Salemme discussed recent efforts to craft a regulatory environment that disarms the argument that cross subsidization must take place. Policymakers are trying to impose upon the phone companies and the administration that some form of strict regulation must be in place with regard to the potential for cross subsidization. He emphasized that those safeguards must be in place before the discussion can proceed to the stage of implementation. This would give comfort to competitors, to consumers, and to politicians who want to take on this issue. This would allow forward movement on information services because it would represent a combined effort. The result would be that the applications that are waiting to be brought to the American public can go forward. Salemme remarked that, without such progress, entities who are threatened by proposed changes may find that they are only forestalling the inevitable. All of the groups are essential to the process, and their cooperation is therefore essential to progress.

#### Question & Answer

The first questioner commented on the need to explode other myths around today's debate. Observing that several analysts called the cable network a one-way system, the questioner noted that two-way boxes were built twenty years ago and that two-way reverse amplifiers were designed into cable systems over fifteen years ago. The reason that there is no two-way, interactive video system in operation in the U.S. today has nothing to do with technology or investment. It has to do with the fact that the customers won't pay for it. He argued that the real question is as follows: what two-way, interactive system using a switch digital network will be more economically viable than the current system? The real questions should focus on what the new services will cost the consumer, who is asking for the services, and who is willing to pay for them. The questioner asked what new information systems are being delayed today by the fact that the telephone companies are not installing a two-way fiber interactive digital network, and what consumers are asking for these new services under discussion.

The discussant agreed that the technology exists for the cable industry, but he argued that is not the problem. The problem has been cost, the customer reaction, customer friendliness, and the critical mass necessary for making provision of these services viable economically.

Another discussant noted that the problem that's holding the U.S. back is the fear of the unknown. The interests aren't willing to move forward because we don't know how the new systems would shake down.

Another discussant observed that we have had two-way services for fifteen years. He remarked that the cable television industry was not technologically driven. It was user pulled and politically shaped. But the issue is being discussed in terms of technology. He maintained that there is a love affair with fibre that is clouding the issue. The cable companies are user full. So we need to step back and consider not only whether it is a better technology, but whether or not it is a cost effective technology.

Another speaker agreed that what exists today is a cable industry shaped by public policy. Public policymakers created the cable industry's deregulated status, by giving allowing it to go into the financial marketplace and develop. The cable industry had protections to develop, and it did a very good job with those protections. The premise was that there would be competition in the industry, but that has not yet been developed. DBS and other technologies have not come in to compete against that one wire providing video services. The goal is still competition, but we don't necessarily keep out the phone industry from the cable industry, nor should we fail to recognize that the future will bring greater competition to the telephone company. Public policy must get past the logjam concept of separate markets.

The next questioner commented that no one had brought up the subject of NREN, and suggested that this was another statement about the bifurcation of telecommunications policy in the U.S. He noted that in the U.S. there seems to be a developing constituency among some NREN proponents to use the concept of the NREN (this has a lot to do with U.S. competitiveness) for provision of advanced information services. He asked for responses to this development. He also observed that the policy gridlock has a lot to do with the MFJ restrictions and that the conditions for lifting those relates a lot to the idea of competition in the local exchange. He noted that there is much happening along those lines in other countries. For example, the U.K. is vigorously deregulating the local exchange; France is using ISDN to provide a lot of band width in the local exchange. He suggested that this idea may be the real key to getting past the policy gridlock.

One of the speakers noted that there is a concern surrounding this idea in the Science and Tech Committee in the House. The Committee maintains that, if you make an investment of the size the NREN proposal would require, then the investment must in fact produce the wide range of users that is promised. The principles of universal service and information disseminated to every sector of users must be realized.