

1 DR. LUCKY: Yeah, I think it is, and it  
2 goes to David's comment about scaling, is the issue  
3 here. And if we can detect that it's not scaling,  
4 that's when I think we have the meltdown. If, as  
5 we add users, we're getting less goodput, I think  
6 that's a very good comment.

7 PROF. RAO: And the other thing I  
8 wanted to say to kind of moderate that, is that  
9 there is this issue of self-regulation that takes  
10 place. People don't keep persisting with a  
11 technology that doesn't seem to be serving their  
12 purposes, so it's possible that there will never be  
13 a dramatic event that tells us that this thing  
14 isn't working. People just sort of shrug their  
15 shoulders and walk on, and find another way of  
16 getting their work done, so it's possible that we  
17 have to be mindful that some of these things might  
18 be subtler than a hard measurable thing.

19 DR. LUCKY: I think sometimes the  
20 spectrum hangs over this, as the CB radio thing  
21 where we actually did see a complete meltdown and  
22 abandonment of it. Anyway, but other comments from  
23 the audience. Sir.

24 MR. LEARY: Yes. To speak to the  
25 comments about congestion.

1 DR. LUCKY: Would you identify  
2 yourself.

3 MR. LEARY: I'm sorry. Patrick Leary  
4 with Alvarion. If I walk into a crowded Egyptian  
5 bazaar without any shoes and I cut my feet, or I  
6 get my toes stepped on, is it the fault -- whose  
7 fault is it? It's my fault because I chose the  
8 wrong technology.

9 The same person could back into that  
10 same bazaar with a pair of steel-toed boots and be  
11 just fine. If that same bazaar, if there's 3,000  
12 people in there, and 2,000 of them don't wear  
13 shoes, and 2,000 of them get hurt, yes, there's a  
14 problem, but that still is not the problem of the  
15 band. It's the problem of the predominant choice,  
16 being chosen by most of those people, so I would  
17 caution, just as Professor Lessig was saying, you  
18 know. The myth of congestion is in large, a  
19 comment about the technology itself that's been  
20 deployed, not about the band itself so, you know,  
21 if you start protecting for this one prevailing  
22 standard, of which I also participate in to some  
23 degree then, you know, you stifle innovation and  
24 you're protecting the wrong things.

25 Second, there was a comment with

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1 respect to what happened if you did auction off  
2 these things. Well, as the largest vendor in any  
3 deployed wireless broadband technology from 10 gig  
4 under, with roughly about a 60 percent market  
5 share, I can tell you what we would do, just like  
6 we did in MMDS. We won't spend our millions  
7 developing product for MMDS, because you have two  
8 choices of having volume sales. And if you don't  
9 get one of those two choices, you're out of luck.  
10 And if you do get one of those two choices, guess  
11 what, you're out of luck, because then they gotcha,  
12 or in the case of Worldcom. So that's what happens  
13 in the real world from an economic sense. Those  
14 are my comments.

15 DR. LUCKY: Okay. Sir, in the back,  
16 and then I'll get to you.

17 MR. LONG: Wayne Long, a private  
18 interested party. It occurs to me that these  
19 technologies are so important that at some point  
20 perhaps some should be licensed technologies, and  
21 they'd be licensed if they're networked as the  
22 class license to the manufacturer, with the ability  
23 to resolve Peter Hadinger's interference problems  
24 by his identification of hotspot, and the many  
25 factors building in the capability in their

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1 devices, and developing the spectrum monitoring  
2 issue, if you will, to determine when and where  
3 corrections are needed, and the manufacturer would  
4 be held responsible. So perhaps it has to be a  
5 class license held individually, and as a group by  
6 manufacturers. Perhaps, even at some point get rid  
7 of Part 15 if they're going towards intelligent  
8 solutions.

9 DR. LUCKY: Okay. In front.

10 MR. EPSTEIN: I'm Bart Epstein from  
11 Latham & Watkins, here on behalf of Cognio  
12 Incorporated today. One of the topics that we were  
13 talking about was etiquette, and the interesting  
14 point that Robert made before was that he could  
15 have five antennas on the same roof, and that's  
16 because he controls them. And if he has a problem  
17 with one, he can simply adjust them. And a  
18 cordless phone user who turns on her microwave  
19 oven, and notices interference can either walk out  
20 of the room, or turn off the microwave oven.

21 And the question of etiquette that I'd  
22 like to raise is as follows. What happens if I  
23 live in an apartment building, and my next door  
24 neighbor has a microwave oven, and it's interfering  
25 with my wi-fi? You know, my definition of meltdown

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1 is if I have my wi-fi card, and it's being knocked  
2 out by my neighbor's microwave oven, that's  
3 meltdown. And the real issue is the property  
4 rights, you know. I can certainly buy a better  
5 microwave oven for myself, but what about my  
6 neighbors? Do I have to buy each of my neighbors a  
7 better microwave oven?

8 Realistically, they're the least cost  
9 avoider, but they don't have any incentive to do  
10 that unless we somehow create a regulatory  
11 environment which says if you're going to have a  
12 microwave oven which blasts throughout the  
13 spectrum, it's got to be limited to certain areas.

14 I wanted to know the thoughts on that.

15 DR. LUCKY: Well, we wanted to move on  
16 to the question of etiquette, and I think it will  
17 be a theme, if not before the break, it'll get up  
18 after that.

19 I would like to say personally though  
20 that I think the microwave oven itself is red  
21 herring, you know. And it receives a lot more  
22 attention than it's really worth. I mean, just  
23 don't stand in front of a microwave oven and do  
24 this, you know. And it's always given as the  
25 prototypical well, you can't do this because there

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1 are microwave ovens, and I don't -- I just think  
2 that that's over-emphasized too much.

3 Let's move on to other comments. We've  
4 got one in the back. Sir.

5 MR. STEVENSON: Yes. Carl Stevenson,  
6 Agere Systems.

7 DR. LUCKY: Do you want to stand up?

8 MR. STEVENSON: Okay. Thank you.

9 I'd like to respond to the other  
10 gentleman's comment about possibly converting  
11 unlicensed uses to licensed uses. I think that's  
12 the wrong way to go, and what I would advocate is  
13 considering rather than the term "unlicensed",  
14 going toward the licensed by rule, or perhaps  
15 licensed by compliance sort of model.

16 In many countries in the world  
17 unlicensed equals illegal, and this issue -- you  
18 know, the issue of property rights of licensed  
19 versus unlicensed services, you have to look at the  
20 value propositions, I think, as part of the overall  
21 thing in terms of where licensed users may have  
22 large amounts of spectrum that is used very little,  
23 as was observed before, big holes in the spectrum  
24 in the time geography space, if you will. Being  
25 able to enforce rights of ownership to preclude the

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1 efficient use of that spectrum by other types of  
2 systems that could share effectively is  
3 inefficient. Thank you.

4 DR. LUCKY: Okay. Larry, do you want  
5 to respond to that before we go on?

6 PROF. LESSIG: Yes. I want to respond  
7 to the last two comments together. I completely  
8 agree with Mr. Epstein's conception that we ought  
9 to be thinking about the cheapest cost avoider  
10 here, as we think about the problem of deployment,  
11 but the FCC could help facilitate a cheapest cost  
12 avoider here. For example, you're worried about  
13 the wi-fi network problem conflicting with the red  
14 herring, or the video camera, something like that.

15 Fine. Again that, I think, is one of the benefits  
16 of the suggestion that we have in the 5 gig area a  
17 mac layer that the FCC could help facilitate the  
18 development of, because if that were true, then the  
19 cheapest cost avoider would be the person depending  
20 on the wi-fi network, moving into a network space  
21 where there's a protocol layer that facilitates  
22 interaction among a number of these different  
23 technologies. So what has to happen, as you open  
24 up the space where you facilitate cheapest cost  
25 avoider moves, which in that context then would not

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1 be buying everybody a new red herring. It would be  
2 moving into a space where you could rely upon  
3 protocols not conflicting.

4 DR. LUCKY: I think we have a new brand  
5 for microwave ovens, you know, see a picture of a  
6 red herring on the cover. Okay. Over there.

7 MR. COOPER: I wanted to get back.  
8 Larry made a important point.

9 DR. LUCKY: You want to identify  
10 yourself.

11 MR. COOPER: Mark Cooper, Consumer  
12 Federation. You asked the question, how will we  
13 know if there's meltdown? We started with  
14 highways. Has the highway system melted down? I  
15 mean, rush hour here in Washington, I think the  
16 definition given over there is that the throughput  
17 has declined per capita, only in rush hour though,  
18 so it hasn't melted down. And then you ask  
19 yourself the question, what is the solution? And  
20 the solution is obviously, may well be mass  
21 transit. And we get to Larry's point, that we're  
22 really not asking questions about highways, but  
23 about transportation systems. And we ought to be  
24 asking questions about communication systems, as  
25 opposed to this little set of applications in this

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1 little part of a much, much bigger system.

2 And I think if you think about it that  
3 way you escape from the tyranny of the meltdown and  
4 the need to find some narrow economic way to solve  
5 that problem here, because you've lost sight of the  
6 much bigger system.

7 MR. REED: Actually, I'd like to  
8 amplify that. In my filing, which I'd be happy for  
9 people to read because it gets into a lot of these  
10 issues on a technical point, I pointed out that if  
11 I were the FCC, I would focus on basically changing  
12 technically certain things. One is, eliminating  
13 the idea that repeating is a bad thing, because  
14 that's what prevents the development of networks in  
15 these unlicensed bands. For example, ultra  
16 wideband was created with an explicit bar against  
17 repeating in the recent rules. And, you know, that  
18 seems to be a knee-jerk phenomenon that, to me,  
19 comes from the idea of barring competition, rather  
20 than any significant technical reason.

21 The other is, and referring to this, we  
22 really ought to consider wireless in the context of  
23 the wired networks and the optical networks and so  
24 forth to the world. It's an Internet-worked world  
25 now, and we ought to -- if I were to say one thing,

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1 rather than focusing on services, i.e.,  
2 applications, the FCC ought to have a network  
3 bureau which is focused on network infrastructures  
4 among all the technologies, rather than services as  
5 stovepipes on technologies, and that would  
6 eliminate this whole band question, because bands  
7 wouldn't be assigned to services. Bands would be  
8 assigned to transport beams, just like we don't  
9 assign railroads to carrying people versus freight.

10 Well, actually we do the cars, but the tracks are  
11 shared among all these applications, and provide a  
12 common infrastructure. And that, you know, what  
13 Mr. Cooper said really sort of emphasizes a  
14 complete 90 degree mindshift about what we're  
15 regulating here. We're regulating communications,  
16 not regulating, you know -- we're regulating bits,  
17 not hertz.

18 DR. LUCKY: Well, you know, David, this  
19 deserves a little more discussion, because in  
20 concept I agree with you. But traditionally and  
21 for practical reasons, we have regulated hertz.  
22 You know, it's like putting up fences in that  
23 commons. You know, it's been a useful mechanism,  
24 and there are things that break that paradigm, like  
25 ultra wideband, that don't naturally, you know,

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1 need or have fences at all. So although I agree in  
2 concept that you ought to worry about communication  
3 and not hertz, practically it's hard to avoid what  
4 they have done in the past; and that is, worry  
5 about hertz, because it sort of sets the fences.  
6 It makes partitions the problem in a space which  
7 makes a problem more easy to regulate.

8 MR. REED: But actually, if I were to  
9 go back to Marconi's time, and say we should do it  
10 differently, we could have followed a very  
11 different path.

12 DR. LUCKY: We could have, but we  
13 didn't.

14 MR. REED: So we've got a path  
15 dependent evolution up to this point, and I fully  
16 understand the reasons for that, but those reasons  
17 no longer obtain. And, in fact, they're really  
18 hurting us right now. And, in fact, what we're  
19 extending is this sort of metaphor, you know, of  
20 band boundaries.

21 You know, every radio signal is  
22 infinitely wideband. It interferes with something.

23 You know, it just may not interfere very much.  
24 And, you know, technically there is no way to have  
25 a narrow band radio signal. The proposals of say

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1 the auction guys that will do microband auctions or  
2 whatever they're talking about, you know, both in  
3 space and time, make no technical sense whatsoever.

4 It's a lawyer's notion of, you know, boundaries  
5 which doesn't make sense. A fence really works  
6 but, you know, if we were trying to draw fences  
7 around the air that we breathe so that we could  
8 allocate it fairly, you know, we'd understand it  
9 was absurd, and in this spectrum it is getting to  
10 be as absurd as that so, you know, people are  
11 talking about protecting the satellites in a  
12 different band from 802.11, because there might be  
13 enough of that that it dribbles over the boundaries  
14 enough, and that's not the place to -- you know,  
15 that's not the way to define what we do.

16 DR. LUCKY: There's a terribly  
17 interesting philosophical question about what  
18 should be and what is. And what happens is --

19 MR. REED: Well, I think we can go  
20 there -- we can get there if we start now, moving  
21 in a direction that's productive, rather than  
22 locking in, you know, 70 year old approaches.

23 DR. LUCKY: I think when we come back,  
24 we can pursue some of this. I'll take one question  
25 or comment from the audience, and then we're going

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1 to take a break.

2 MR. GODFREY: I'm John Godfrey with  
3 Sony Electronics. I think the right answer is to  
4 do both, to proceed on two paths at the same time.

5 Certainly, the very wideband systems offer a  
6 revolutionary way forward. The biggest obstacles  
7 they encounter are political, and it's not only  
8 Darwinian competition, or people resisting  
9 Darwinian competition to their businesses. It also  
10 includes government users of spectrum who don't  
11 want to move, or there isn't the political  
12 structure in place that can find a fair way to  
13 compensate them for moving.

14 There's a lot of work that has to be  
15 done on the political structure to allow that to  
16 move forward, but we should try. We should do some  
17 experiments with underlay technologies and see how  
18 it works, begin to build interest in that, begin to  
19 reduce the fears around that. But at the same  
20 time, I think it would be terrible if today's  
21 workshop didn't also conclude that we have to, at  
22 the same time, look at some discreet ISM-like bands  
23 for unlicensed services to operate, where you have  
24 cleared out the people who would have the right to  
25 shut down those unlicensed services any time they

1 feel they're being interfered with, which happens  
2 all the time in the world today. And that's about  
3 it.

4 DR. LUCKY: Okay. I think this goes to  
5 Larry's comment earlier about the difference  
6 between technical interference and competitive  
7 interference. And perhaps you'd like to end with a  
8 comment about that.

9 PROF. LESSIG: Well, I would. And I  
10 think that there's political resistance. I also  
11 think, to follow what David was saying, there  
12 ideological resistance. And here's where I agree  
13 with David, lawyers and economists are doing the  
14 most harm, because they're committed to a  
15 particular ideology which made sense in a whole  
16 bunch of contexts, without looking at the  
17 particulars of the technology.

18 Now what's interesting about this  
19 debate is that if you talk to the big band people,  
20 they say that their god is Ronald Coase. And if  
21 you talk to the spectrum as commons people, they  
22 say that their god is Ronald Coase. And let me  
23 just make a little plug and an advertisement. Just  
24 yesterday, Ronald Coase agreed to participate in a  
25 conference at Stanford in the spring, where we will

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1 debate this property or commons idea. And at the  
2 end of the day, there will be an oral argument, and  
3 he will be the Supreme Court judge, and he will  
4 hear both sides, and have the opportunity to ask  
5 questions, to finally resolve this question where  
6 Ronald Coase is in the formation of this ideology  
7 that haunts, and is the specter haunting this  
8 debate.

9 DR. LUCKY: Fascinating. Let's take a  
10 15 minute break. Thank you very much.

11 (Off the record 11:21 - 11:34 a.m.)

12 DR. MARCUS: Okay. Here is the list of  
13 speakers we have for the second panel. Like for  
14 the first panel, we're going to have several groups  
15 of questions. This time we're going to have three  
16 groups of questions, and we'll give you a sneak  
17 preview this time so people don't try to jump the  
18 gun. But we're willing to be a little bit flexible  
19 as to which batch of questions you ask in. Again,  
20 if you ask a question, we ask you to give your name  
21 and affiliation.

22 The first batch of questions deals with  
23 general issues of how you might improve Part 15, or  
24 improve protection to other types of systems from  
25 Part 15 devices. The second class of questions

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1 will deal with specific Part 15 limits, such as the  
2 emission limits in Section 15.209, which apply to  
3 everything under 50 gigahertz, but then above 40  
4 gigahertz, we have a totally different regime, or  
5 the limits of 15.203, which are -- restrict what  
6 type of antennas you can use with an unlicensed  
7 system, and in requiring in most cases that systems  
8 be sold as a turnkey system transmitter antenna and  
9 cable in one fell swoop. And the third set of  
10 questions deal with both possible needs for new  
11 classes of systems, and questions of should we have  
12 different power limits for indoor, urban, suburban,  
13 rural areas.

14 So why don't we start off with the  
15 first set of basic question for the panel, and then  
16 we'll go to the audience, of what changes to Part  
17 15 might be needed to enhance the application of  
18 Part 15 devices, or conversely, is there a need for  
19 any changes to Part 15 to enhance protection to  
20 licensed systems that share the same or nearby  
21 bands? So who on the panel would like to go first  
22 on that one? Okay, Dudley.

23 MR. FREEMAN: I think one of the issues  
24 is the ability to change out the equipment. Right  
25 now equipment manufacturers are having to sell the

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1 entire system, including cables, connectors,  
2 antennas, radios and indoor units connecting up,  
3 and I think that actually the manufacturers are  
4 building radios and indoor units. They really not  
5 in the antenna manufacturing business, and there is  
6 a 23 dB gain antenna, that is the spec for that  
7 specific system as a whole system that the end user  
8 should have an opportunity to say hey, I want to  
9 buy an antenna from XYZ Company, as long as it  
10 meets the criteria and is type-accepted on filing,  
11 they should be able to change that out.

12 DR. MARCUS: Okay. Well, let's go into  
13 that in a little more depth in the second batch of  
14 questions, but certainly that's a point we've heard  
15 a lot in the comments. Are there any other --  
16 anyone else on the panel would like to speak on  
17 it?

18 MR. LEARY: Sure. I think in general,  
19 Part 15 has been phenomenally successful, and I  
20 guess some would say visionary when it was created,  
21 for allowing vendors like ourselves to do things  
22 that were never intended. However, there still is  
23 perhaps too static a nature to the rules, and I  
24 think the rules can be amended such that, you know,  
25 they promote spectral efficiency a little bit more,

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1 maybe within some sort of ratio or log rhythmic  
2 ratio that takes into account power, spectral  
3 density, and even spatial density in terms of  
4 omnisources sectors.

5 For example, you know, we would contend  
6 that perhaps the lowest power device should be, you  
7 know, a very low efficient device that's, you know,  
8 sitting on omni say maybe 20 dBm, but that same  
9 device when applied to perhaps the 45 degree sector  
10 should be allowed maybe a bit more power. Or that  
11 same device, were it a bit more spectrally  
12 efficient could have a corresponding higher power  
13 allowed even out of an omni, and then even more so  
14 out of a sector, so it would promote the  
15 development and innovation of more spectrally  
16 efficient systems.

17 I think the way that the rules are now  
18 there is some degree of limits that vendors can do  
19 in terms of building in very efficient systems or  
20 intelligent systems that are able to avoid other  
21 systems out there, et cetera.

22 DR. MARCUS: Okay. I didn't mention  
23 the word "etiquette" per se, but that was a good  
24 discussion in the previous session on etiquette,  
25 and when we talk about the issue of what changes,

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1 etiquette certainly might be a change that might be  
2 considered either one way or the other.

3 DR. deVRIES: So when I started  
4 thinking about this, Paul Kolodzy challenged me,  
5 and challenged us to come up with, you know, new  
6 ways to categorize the different concepts here.  
7 And it struck me, and I'm not a lawyer, and I'll  
8 leave it to the lawyers in the room to, you know,  
9 turn this into the appropriate terms, but there are  
10 a couple of dimensions when we think about  
11 allocating spectrum that come into play.

12 One of them is how you think about the  
13 locus of control. Who has control over a  
14 particular use? And typically if we think about  
15 "licensed", there is one party that is, you know,  
16 given the license that controls the spectrum. In  
17 "unlicensed", typically, you know, there are many  
18 people, so the locus of control is completely  
19 generalized. And where we've ended up, I think, is  
20 that there is a one-on-one correlation with all  
21 sorts of different parameters with these two  
22 things, and I don't think it necessarily has to be  
23 that way.

24 And when we've started thinking about  
25 the problems that we want to solve which is, you

1 know, how do we make sure that we get broadband  
2 networking to the American people? We've come to  
3 the conclusion that it would be good for the FCC to  
4 think more broadly about what the choices are, so  
5 specifically in terms of locus of control. So  
6 right now we have that, you know, you control the  
7 spectrum and there's one kind of use. On the other  
8 hand, where you have "unlicensed", anything goes.

9           Those two things, those two  
10 correlations aren't built into nature. There can  
11 be other variations, so for example, what we're  
12 seeing is that there is definitely a trend for  
13 services that are licensed to use a particular area  
14 band, are allowed to do more generalized things.  
15 In the same way, we believe that it would be  
16 appropriate for generalized uses to actually be  
17 limited in some cases where there is no central  
18 locus of control, and that will get us to spectrum  
19 etiquettes which we can talk about later.

20           DR. MARCUS: Anyone else want to say  
21 anything?

22           DR. NEGUS: Yeah.

23           DR. MARCUS: Okay. Kevin.

24           DR. NEGUS: I think on the general  
25 subject of Spectrum Etiquette, and this goes back

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1 to some of the discussions of interference and  
2 meltdown from the previous session, it's really  
3 important to understand the dimensionality of  
4 spectrum access or using the radio frequency  
5 spectrum. And we've tended traditionally to look  
6 at it as a frequency domain issue. To a lesser  
7 extent, but certainly some exists today, it's a  
8 geographic issue; that is, the frequency domain  
9 could be used in different geographies, but there's  
10 -- as the ultra wideband shows, there's also  
11 effectively a coding or an underlay dimension to it  
12 that can be exploited, but there's also a  
13 tremendous spatial dimension that can exploited,  
14 and hasn't been exploited in the regulatory regime  
15 very much, at least not as applied in the  
16 Unlicensed Spectrum. And I think this is what  
17 Patrick just started to allude to.

18 There's also a time domain dimension,  
19 and that's really where we're getting into things  
20 like dynamic frequency selection, where spectrum  
21 that is unoccupied in a specific geography, at a  
22 specific frequency, in a specific spatial  
23 orientation, at a specific moment in time can be  
24 dynamically allocated. And I think that when we  
25 factor all of these into the etiquette rules,

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1 whether within the Part 15, or perhaps another  
2 comment from the earlier panel was we want to see  
3 more unlicensed radios, as opposed to unlicensed  
4 bands. When we factor that into how we would have  
5 unlicensed radios, radios that are licensed by  
6 compliance. Then that's the breakthrough that I  
7 think is going to allow wireless, quite literally,  
8 to replace wired networking. Not replace fiber  
9 across long haul, but within the local dimension,  
10 would completely replace wired networking.

11 DR. MARCUS: Could you say something a  
12 little bit more how you would exploit the spatial  
13 dimension in our regulatory world? If you were the  
14 FCC, what would you do?

15 DR. NEGUS: Well, I know Mike, and I  
16 know what he wrote on the 2.4 gigahertz and the  
17 point-to-point. I think that as one --

18 DR. MARCUS: This is a three-tenths of  
19 a dB --

20 DR. NEGUS: Right. Right. Right. I  
21 think that that is exactly the type of approach  
22 that needs to be applied across the board with Part  
23 15, that as you narrow your beam width, your EIRP  
24 limitation is moving up. I think that's just a  
25 fundamental conversation of energy, or conservation

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1 of interference concept that allows and  
2 incentivizes radio manufacturers to be much more  
3 efficient.

4 And here's the thing about -- I believe  
5 Bob mentioned in the first panel about multiple  
6 input/multiple output technologies, MIMD  
7 technologies. We are moving into a realm where  
8 Moore's Law allows us to build very sophisticated  
9 transceivers such that the affect of high antenna  
10 gain is something that is also programmable and  
11 steerable on the fly, on a per connection, or even  
12 a per packet basis that we can reconfigure  
13 dynamically and electrically the antenna  
14 characteristics.

15 And we should have, in the regulatory  
16 domain, the flexibility to access power and  
17 bandwidth, depending on our ability to do that,  
18 because as we narrow the beam, we'd lower our  
19 interference footprint.

20 DR. MARCUS: Okay. Anyone else?

21 MR. REILLY: Yes. Just on behalf of  
22 Cisco, I'd like to indicate that we believe that we  
23 should step back from this, as was suggested in  
24 some of the panels this morning, and look at this  
25 as kind of the complete picture. And we believe

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1 wireless, both licensed and unlicensed, together  
2 with wire line infrastructures, have the potential  
3 to provide the new broadband access that works in  
4 networks that would provide services to all  
5 Americans.

6 We think the experience with wireless  
7 local area networks has shown us the capability of  
8 that technology to basically aggregate broadband  
9 demand. And as we look as to how we can best go  
10 forward, we think that the best mechanism is to, as  
11 was suggested by several this morning, to have  
12 additional spectrum, but have it not only  
13 identified for unlicensed purposes, but  
14 specifically set aside some for data networking  
15 purposes. And there would be some specific rules  
16 that would relate to common etiquette techniques  
17 that would be helpful with regard to mitigating  
18 interference situations.

19 One point I'd like to emphasize  
20 relative to that, as we heard this morning, there's  
21 lots of discussion about etiquette. I'd like to  
22 reinforce the issue that when we talk about this,  
23 I'm not suggesting that the FCC have rules that  
24 spell out in great detail what that etiquette would  
25 be, but rather leave the issue of having an

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1 etiquette in the rules, and then allow for the  
2 marketplace to establish standards with regard to  
3 what etiquette, what kinds of techniques that might  
4 be available.

5 There are a whole host of very  
6 significant technologies that are currently  
7 emerging, but we don't know which ones will emerge  
8 tomorrow that will be even better, and so we think  
9 that it's best to provide minimum restraints with  
10 regard to the etiquette, and that's the point I'd  
11 like to reinforce.

12 DR. MARCUS: Carl.

13 MR. STEVENSON: I would agree with  
14 that. I think that to the degree possible, the  
15 Commission's rules should be as technology neutral  
16 so that we don't find ourselves blocked from  
17 innovation in the future. But again, going back to  
18 this idea of sharing and, you know, everybody  
19 seemed to agree that we could use more spectrum for  
20 systems that are licensed by compliance. I'm going  
21 to avoid using the word "unlicensed" from now on.

22 But part of the problem is, you know,  
23 the question was asked, well, where does this  
24 spectrum come from? Well, the spectrum can come  
25 from technical innovation in the industry standards

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