

1

2

3

TRANSCRIPT

4

5

ITS PROGRAM ADVISORY COMMITTEE MEETING

6

7

8

Friday, August 1, 2008

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

32

33

34

35

36

37

Admiral II-III Conference Room

38

Courtyard by Marriott Capitol Hill/Navy Yard Hotel

39

140 L Street, SE

40

Washington D.C. 20003

41

42

43

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36

TABLE OF CONTENTS

<u>Topic</u>	<u>Page</u>
Call to Order	1
ITS Program Major Initiatives Updates	1
Next Generation 9-1-1	3
Emergency Transportation Operations	18
Rural Safety	27
Integrated Vehicle-Based Safety Systems (IVBSS)	43
Vehicle Infrastructure Initiative (VII)	66
Cooperative Intersection Collision Avoidance Systems (CICAS)	92
Clarus	108
Congestion Initiative	127
Integrated Corridor Management (ICM)	144
Mobility Services for All Americans (MSAA)	154
Electronic Freight Management (EFM)	171
General Discussion	182
Wrap-up	207
Next Steps	209
Adjournment	219

1

2

P R O C E E D I N G S

3 **Call to Order**

4

(Convened at 8:05 a.m)

5

Robert Peter Denaro: We're going to get started. We

6

have a busy day, as you know. First off, Shelley has some

7

things to pass around.

8

Shelley Row: This is a list of all the Advisory

9

Committee members and their contact information. If you

10

would just double check your information and check it off

11

if it is okay. And if it isn't, if you could correct that,

12

we would appreciate that.

13

And then, I have something, let me go ahead and pass

14

around. This is the Budget Document I mentioned to you

15

before. Some of these numbers have changed, but this will

16

give you where we started from a few months ago. So, I'll

17

just pass that around.

18

ITS Program Major Initiatives Updates

19

Robert Peter Denaro: So, what we have today is

20

walking through the program updates. And, just to remind

21

everyone, we have three questions that we're charged with

22

answering here. And, I guess what we decided yesterday was

23

to jot down your notes. You have some pages at your place

1 there, one each on the three questions.

2 The three questions are, are these activities likely
3 to advance the state of the art? Secondly, are the
4 technologies likely to be deployed? And thirdly, are they
5 the appropriate roles for the government and the private
6 sector, and perhaps, academia and so forth in these
7 activities?

8 And the format will be that we will have the major
9 programs, roughly a half hour total, fifteen minutes of
10 presentation and fifteen minutes of interaction, addressing
11 these questions. Anybody, are there any questions on that?

12 Dr. Joseph Sussman: So, we want to answer that
13 question for each of the programs?

14 Robert Peter Denaro: Yes. You have to keep your
15 notes in order there. What I think we will do is, we will
16 collect it all at the end. We will have some level of
17 interaction, but we will be moving pretty fast. What I
18 think we will do is collect them, and Joe and I will kind
19 of sort through and see if we can write some level of
20 summary back to you later. And it, perhaps, will become
21 part of our Advice Memo, following this meeting.

22 Joseph Averkamp: So, as we're going through each of
23 the presentations, we're going to talk to each of these

1 questions?

2 Robert Peter Denaro: To the extent we can. There
3 might be some comments you have.

4 Joseph Averkamp: On the ones that are clearly going
5 to sunset between now and 2010, what will we do?

6 Robert Peter Denaro: Do less, right. I mean, but it
7 still might be one we want to address. Alright, so, the
8 first one, I believe, is NG911?

9 **Next Generation 9-1-1**

10 Shelley Row: NG911, and just so you know, I sent an
11 email to the staff, which I hope they got, last night,
12 based on our conversation yesterday. And I've asked them
13 to try to focus some of their remarks on the research
14 results that they have learned to date. So, that they may
15 not necessarily hit all the bullet points on their slides,
16 but they're interspersing their discussion a little bit
17 about the research results.

18 So, Linda Dodge, who is our Program Manager, is going
19 to talk about NG911, ETO, and then the Rural Safety
20 Initiative will be next, because that's also Linda's lead.

21 Robert Peter Denaro: Before she starts, on a personal
22 note, I want to thank whoever was responsible for it. And,
23 maybe it was you, Shelley, or just someone in general, but

1 the gesture in my room was very special, so thank you.

2 When I checked in, I was amused to see that I had Room 511.

3 (Laughter)

4 Shelley Row: Anything we can do. We're on top of it
5 all. And, I'm so relieved, because I had no idea where
6 your room was.

7 (Laughter)

8 Linda Dodge: I didn't know there was an opportunity,
9 or I would have tried to tip the bellman to get 911.

10 So anyway, good morning everyone, I'm Linda Dodge, and
11 it is my pleasure to be the Program Manager for NG911. And
12 this has been a two year project, one that is winding down
13 rapidly. So, we've had twenty-four months of intense work,
14 with regard to the contractual part. We had an additional
15 year prior to that for planning. So, basically, what
16 you're seeing here are the accomplishments this year.

17 This is a section, or if you will, a segment of the
18 fifty-two deliverables. We had fifty-two deliverables in a
19 twenty-four month period, so it was pretty ambitious. And
20 everything is, currently, on time and on budget. And, it's
21 kind of scary, but we're very happy about that. We are in
22 the process of - we have a short amount of time, so I'll go
23 through this. If you have any questions, I'll be more than

1 happy to go back.

2 Where we are right now, we have completed our Proof of
3 Concept testing. We just recently completed the testing at
4 our five POC sites. Those sites not only did the testing,
5 but they also did live demonstrations. And this gave us an
6 opportunity for the jurisdictions to be able to share with
7 the community, not only the community that they serve, such
8 as the public safety community, but also the user
9 community, the public, themselves, as to what the
10 capabilities of Next Generation 911 will be.

11 And those demonstrations were so successful, in fact,
12 and this, I believe, is one of the one of the outcomes that
13 Shelley would like me to share, is that we started out with
14 a list of requirements, and that list of requirements was
15 pretty demanding. And in fact, that we had a very short
16 period of time to do this test.

17 And so, because of that, we identified the different
18 populations of the various sites that were being looked at.
19 For example, Rochester, New York has a very high population
20 of hearing impaired individuals. So we felt one of the
21 things we would want to do there would be to test some of
22 the capabilities of the future NG911 system that would most
23 benefit that population, such as videoing and text

1 messaging, and so on.

2 That was tested and it was tested successfully. In
3 fact, all of the requirements were met in all of the tests.
4 Because once we started, it became very clear that all the
5 preparation that had been done in advance was done such
6 that all the requirements were successfully then tested in
7 every site, not just the original set that we went out to
8 test.

9 We were going to test a couple in each, and then we
10 were going to do a system test. Because of the success, we
11 were able to test every requirement at every site, as well
12 as the system.

13 Yes, Shelly?

14 Shelley Row: I just wanted to make sure that the
15 Committee was aware of what it was we were testing. NG911
16 is testing the IP text messaging capabilities, to get that
17 into a PSAP. So, when Linda is talking about testing, they
18 test instant messaging, telematics, voice over IP, text
19 messaging, video, trying to get those kinds of calls into a
20 PSAP, which currently, it's not able to do.

21 Joseph Averkamp: The one question I had, which is not
22 called out in the Program Summary is, does that include
23 delivery of location data? One of the big shortcomings in

1 the voice over IP Systems is that they don't include
2 delivery of address or location data.

3 Linda Dodge: Yes. I apologize. I shouldn't assume
4 that everyone read the preparation material, because I
5 don't always do that, myself, and I apologize. But yes,
6 Next Generation 911 is certainly an advance over what we
7 currently use. It will allow us to, in the future, make a
8 911 call from any device with which we can communicate.

9 So for instance, if currently wish to communicate via
10 your laptop, and you need to contact 911, you will be able
11 to do so, and, we will be able to find you, assuming that
12 you have your GPS locator turned on. Any other questions
13 about the original purpose of the Next Generation 911
14 Initiative?

15 Dr. Joseph Sussman: Linda, do you consider any of the
16 privacy issues inherent in this kind of technology? Of
17 course we want to locate people, but there are some privacy
18 considerations, as well?

19 Linda Dodge: Of course, there are privacy
20 considerations, and I think it varies, depending on your
21 situation. If you want to be under the screen, so to
22 speak, and have no one know where your location is,
23 certainly that is your prerogative; however, when you have

1 an emergency, most people do want to be found.

2 And, at what point in time do you turn on that device
3 so that your G.O. locator is active? And, that's something
4 that, I think, the further we go with this, and standards
5 are developed that address those type of privacy issues,
6 the public will become much more comfortable with that.
7 But again, that is something that is going to come through
8 the standards process.

9 Joseph Averkamp: With the wireless industry, the way
10 it does work is, you can turn off your locator for any kind
11 of commercial application, but you cannot turn it off for
12 PSAP. That is one call that will always be deliberate.

13 Michael Replogle: You can't turn it off for what?

14 Joseph Averkamp: Patching to a public safety
15 answering phone. So, when you're calling 911, your
16 location will be tracked. So, when you turn off the G.O.
17 locator function on your phone, and that is true for any
18 commercial application, you can't be found. But it will be
19 passed - the GPS function on a phone will be passed to the
20 operator - the 911 operator.

21 Dr. Joseph Sussman: So, that's inherent in the
22 hardware?

23 Joseph Averkamp: It is a function of - that's the way

1 all the wireless carriers have gone, and it's been very
2 thoroughly vetted by the CTIA and the wireless industry, as
3 far as that being an acceptable process.

4 Linda Dodge: And, Next Generation 911 actually built
5 on our wireless E911 - WE911 Initiative. Is there anything
6 else I can address now?

7 Robert Peter Denaro: Linda, where does this go next,
8 then?

9 Linda Dodge: Thank you, I'll just go on with my
10 presentation. The way it's going to go from now is to tell
11 about some of the accomplishments. And I wanted to touch
12 on the fact that we have, basically, two major research
13 accomplishments, if you will, in addition to all of the
14 accomplishments we did as a part of the Initiative.

15 Our research outcomes have allowed technical and
16 political advancements. With the technical, basically, we
17 have started a dialogue among the industry. Rather than
18 having multiple agencies and entities discussing which way
19 they were going to go with Next Generation 911, the
20 leadership of DOT has allowed them all to come together.

21 We have encouraged the stakeholders to come together
22 and work with us on this. And, one of the things we did
23 with the federal stakeholders, and state and local

1 industries, was we brought everyone together to say,
2 basically, "Here's what we need. We need your input so
3 that everyone's on board. How can we best address this
4 issue?" And in fact, DOT has been praised in numerous
5 environments, in areas we have never felt welcome before.
6 And, it has been very successful for DOT.

7 Now, where it goes in the future; at the close of this
8 Initiative, it's going to transition to the National 911
9 Office. And another outcome of this is, basically, that
10 the recognition DOT got allowed them to be one of the
11 forerunners at being selected for the National 911 Office.

12 And because of the commitment toward this, NTIA and
13 the EMS Office with the National Highway Traffic Safety
14 Administration will be housing the National 911 Office.
15 So, everything we've learned, all of the information with
16 regard to the architecture and the transition plan, will
17 transition to the National 911 Office.

18 Tomiji Sugimoto: Is there any opportunity to have the
19 (inaudible).

20 Linda Dodge: We have had the Emergency Medical
21 Services providers and we have Emergency Medical
22 Physicians involved. We allow anyone and everyone to
23 participate, and encourage that. We work very closely with

1 those entities.

2 Now remember, with Next Generation 911, what we're
3 doing is getting the call from the public to the PSAP.
4 That's the segment we're dealing with now. Now, this
5 technology, obviously, will help the further distribution
6 of those calls. And one thing that will be accomplished
7 from this, also, is the fact that we will have a reliable
8 redundant system.

9 So, in the case of another Katrina, or whatever, where
10 the PSAPs no longer can receive calls and provide response
11 for it, those calls will be transferred to another PSAP
12 that take care of those calls. So, that's another thing
13 the system has provided for.

14 Shelley Row: One thing the Committee should be aware
15 of on this project is, what this research did was to
16 develop a new architecture for, basically, all different
17 types of calls going into a PSAP. It is based on IP.

18 The current system is an old analog system, so what we
19 did was to develop the new architecture, we tested it in
20 five locations, and they got tremendous press. And so, we
21 have all of that material now that could be used by a PSAP
22 to migrate into that new environment.

23 But, there are no funds for that, so they have to

1 choose to do it, they to choose the deployment, it's at a
2 local level. So that the big lift would be now, how do
3 they get the money? How do they make the investment and
4 take what we did as research, and actually implement it?

5 The National 911 Office and NHTSA have some grant
6 programs that they are going to be administering which will
7 be able to help them. So it will keep going - that
8 initiative will keep going through them, but that is the
9 ultimate endgame, is to get this deployed at the PSAP
10 level.

11 Joseph Averkamp: So, one of the observations I would
12 make, and I think this gets to our second question about
13 barriers to deployment is that, there are about four
14 thousand PSAPs out there. And, I know one of the
15 challenges has been in the wireless industry, is getting
16 them funds to upgrade their facilities. And so, we don't
17 have a specific plan for funding them. There is some grant
18 money, you say?

19 Shelley Row: The National 911Office has a grant
20 program.

21 Linda Dodge: The 2004 E911 Act that was passed by
22 Congress, it was the last bill signed in 2004, and
23 basically provides the structure for funding for that type

1 of activity. It hasn't been funded yet.

2 Joseph Averkamp: Is there a mechanism by which,
3 because in the wireless industry there's actually fifty
4 cents added to every phone bill that creates a pool of
5 money, and as a PSAP, you can apply for it. Do we have any
6 such mechanism like that?

7 Linda Dodge: Funding is going to be a major concern
8 as we move from the analog system and the current funding
9 base on hard line and cable connection toward whatever
10 surcharge is being assessed. That is something being
11 discussed within the industry, and with the provider
12 agencies, as well, as to how we will be able to fund that
13 in the future to maintain that service?

14 Scott Belcher: Joe, is there a business model for
15 funding that?

16 Joseph Averkamp: Well, there is. There has been, and
17 the telephone industry deals with this all the time with
18 universal service fees, and they also had the E-911 tax
19 that has been applied. So, I was just curious. It's very
20 useful work and we need to move it to the next generation,
21 where we can support all sorts of delivery methods for it.

22 But, the challenge we always have is that the PSAPs
23 don't have the money to upgrade their equipment. So, if

1 you were an operator in Dubuque, Iowa, it didn't matter how
2 advanced the state of the art was, they were not able to
3 afford it.

4 Linda Dodge: It goes back to the 1972 EMS Act and how
5 911 was originally funded, which was based on your billing,
6 you know, whatever your service was, that you had for your
7 phone. Eventually they said, "Well, we've got to be able
8 to pay for this," and they did the surcharge. And
9 eventually it went to E9-1-1, and now we're in a system
10 where people are moving away from those hard line phones,
11 but we still have the cost of maintaining the system. In
12 fact, the conversion is probably going to be more costly
13 than what we're dealing with now. So, the industry is
14 looking at alternatives.

15 Dr. Kenneth Button: On this particular project, your
16 finite agreement is not really to deal with, I mean, that
17 is, I think that is an important point, whether you deliver
18 something which is useful for the next stage. As far as I
19 understand, this is more a technology project, rather than
20 a political, administrative project, for getting the thing
21 into the system.

22 Linda Dodge: That's true, but it did have major
23 political implications, in that it allowed people to come

1 together and start talking, and actually to cooperate in
2 areas where, in the past, they haven't cooperated because
3 they were busy trying to determine how they could move.

4 Dr. Kenneth Button: But, that's more of a side
5 effect.

6 Linda Dodge: Exactly, it is.

7 Dr. Kenneth Button: Side effects are often useful to
8 note.

9 Linda Dodge: It is, especially, I think, in this
10 area, because what we're also doing at the close of this
11 is, is we're doing a spec sheet, which will help the local
12 jurisdictions say, "Here's what we need," so that they can
13 best price out what they're going to need, and help them go
14 to the local jurisdictions. And then the competition
15 begins among the providers and carries.

16 Dr. Adrian Lund: I think it's important to note, in
17 terms of what this Committee is discussing, that this side
18 effect is a key question for us, and that is how this is
19 going to be deployed, nationally. And, one of the
20 barriers, as I understand it, what we're saying here is
21 that this program has demonstrated the feasibility of the
22 technology that seems to have passed with flying colors in
23 all the states. But now, it's simply handed over, "Here it

1 is," and it's up to five thousand PSAPs—

2 Linda Dodge: Six thousand, actually, but who's
3 counting?

4 (Laughter)

5 Dr. Adrian Lund: To individually take it up?

6 Linda Dodge: Yes; however, we do have that National
7 911 Office that will take the Transition Plan. And, in
8 fact, Congress has required them to prepare a Transition
9 Plan. Well, the Next Generation 911 Initiative has already
10 provided that Transition Plan, so they're ahead of the
11 game.

12 So, they'll be able to provide the Transition Plan and
13 Recommendations for how this can be accomplished. And
14 then, whether Congress sees fit to add additional funding
15 or not, or opportunities for them to be more of a catalyst
16 in this, then we're hopeful. Because the National Highway
17 Traffic Safety Administration is able to be a partner in
18 this. And, while we funded it, they were very aggressive
19 in helping us get this done, and delivering the final
20 product.

21 Dr. Joseph Sussman: We will be hearing more speakers,
22 so I'm trying to get some of the notation down pat. You
23 say no new FY'09 funds are anticipated, yet there is work

1 that is going to be done in 2009?

2 Linda Dodge: There is work that's going to be done,
3 and it's based on a contract that was a twenty-four month
4 contract. That contract does not close out until December
5 31, so that funding has already been committed. So, while
6 we're not asking for new funding for FY'09, there will be
7 some work being completed in 2009, based on funding we
8 already had in 2008.

9 Dr. Joseph Sussman: Final reports?

10 Linda Dodge: Final reports, the spec sheet that I
11 mentioned and things of that nature.

12 Dr. Joseph Sussman: So, the money carries over?

13 Linda Dodge: Yes, it does. It is on the contract.
14 So, once all of those tasks are completed, then the
15 contract will close out with the final report.

16 Robert Peter Denaro: I was going to say, this is one
17 of the efforts that, since it was done, we probably spent
18 less time on it. I encourage us to move on now; however, I
19 think we've identified the barriers, and so forth. Are
20 there any last comments from the Committee. Any questions?

21 Linda Dodge: But, it is an exciting topic, I've got
22 to say.

23 Robert Peter Denaro: Yes, it's an important one, for

1 sure.

2 **Emergency Transportation Operations**

3 Linda Dodge: Emergency Transportation Operations.

4 This initiative was not as focused as the National 911
5 Initiative. Basically, it represented approximately
6 thirteen projects that, while weren't specifically
7 connected, were very complimentary to one another.

8 So, as we worked through those over the last three
9 years, funding was expended down, as you notice, the last
10 obligated \$350,000.00 this year. And this will close out
11 the ETO, as well. And with that, we had a lot of research
12 results, and a couple that I'll share with you, because I
13 think since we just went from NG911, you'll appreciate
14 this.

15 We completed a camera phone project which was a
16 collaborative venture between Virginia and Maryland, and
17 the State Police, and the DOTs. And what we were finding
18 out, and I'm sure that you all have sat in congestion from
19 time to time and wondered what was going on why the tow
20 trucks weren't moving, and why the tow trucks are sitting
21 on the side of the road?

22 And part of the time, it's because it's the wrong
23 equipment. And the reason it's the wrong equipment is

1 because we count on individuals who are calling it in, to
2 provide us with that information. And, without a visual,
3 that information, certainly, it's like the game of
4 "gossip." You don't always get the information you need.

5 And a perfect example was, on Route 66, and those of
6 you who travel through Northern Virginia are probably very
7 familiar with that area. On one particular day, an
8 individual called in and said, "There's a truck
9 overturned." And basically, the information came out,
10 "It's pretty much a pick-up with a small load of dirt on
11 it,"

12 And an hour and a half later, they were still getting
13 the equipment there that they needed, because it was a
14 major earth-moving dump truck and they needed a loader,
15 they needed a sweeper, and they needed a dump truck to load
16 it into. And so, everyone, all of us in this room, were
17 sitting there, for an additional hour and a half, without
18 an alternate route because we didn't have that information.
19 So, that increases the risk to the rescuer, the first
20 responder, maybe to the truck driver, and also to us who
21 were sitting in that queue.

22 So, the camera phone, essentially, was a project that
23 we funded, through the University of Maryland, to manage

1 the project. And, we outfitted the tow truck drivers with
2 the best technology, you know, the greatest phones out
3 there. And they came in with better phones than we had -
4 very technosmart. But, we did outfit the jurisdictions of
5 the State Police that were going to be active in that
6 particular project.

7 The arriving State Trooper would take a picture of the
8 crash scene and go on about his business of making sure
9 that he could secure the scene, making sure it was safe for
10 everyone. And in the meantime, the image was going back,
11 was dispatched and being forwarded either directly to - it
12 could go directly to the tow truck drivers, or could be
13 forwarded to the State Police dispatch, to the tow truck
14 drivers, depending on how the state was going to work it.

15 So, the drivers could see the particular problem and
16 could assess whether they needed a HAZMAT crew, whether
17 they needed some type of a liquid transfer mechanism, or
18 did they just need a small tow truck? That was successful.
19 The report was jus completed and will be presented at World
20 Congress.

21 Scott Belcher: Linda, did the information also go to
22 the Traffic Management Center?

23 Linda Dodge: It's available to go to the Traffic

1 Management Center through DOT, because that was one of the
2 partners. So basically, you have the state control, you
3 have the towing industry, and you have the Virginia and
4 Maryland DOTs.

5 Scott Belcher: Okay, thank you.

6 Linda Dodge: It depended on the area it was in,
7 whether it went through major TMC, or not.

8 Scott Belcher: Right.

9 Robert Peter Denaro: You've said tow truck drivers
10 had cameras with them, and police had cameras? Was it both
11 of them?

12 Linda Dodge: Yes. The tow truck drivers only used it
13 if they needed to request additional equipment and show
14 what they have for the most part. They all had camera
15 phones.

16 Robert Peter Denaro: So first, the officer would try
17 to identify to the tow truck driver, then when he got there
18 he could change his mind and take another picture?

19 Linda Dodge: That's right. This was kind of a
20 precursor to see whether this was reasonable for all public
21 safety. We wanted to take a particular discipline that we
22 felt was a smaller population, if you will, because each of
23 the states has contracts with the particular and had a way

1 of managing that tow response.

2 And so, we felt this would be a good way to test it,
3 and it worked. There were a couple of delays. We lost of
4 couple of project managers, and so it was about six months
5 late being delivered, but we were very happy with the
6 product that we got.

7 Robert Peter Denaro: I just got a fancy new phone,
8 and I didn't know it had a camera until we came. And I
9 think I know how to take a picture, but I definitely don't
10 know how to send it to anybody. Was there a training
11 implication here, too?

12 Linda Dodge: There was. There was actually.

13 Joseph Averkamp: You need a fifteen-year-old.

14 (A bit of laughter)

15 Linda Dodge: Kaplan, working with our technical
16 consultants, developed a training program for the
17 respective State Police, as well as for the tow truck
18 drivers.

19 Robert Peter Denaro: This would be a deployment
20 issue, as well, if it would be done on a wide-scale basis.
21 First of all, to achieve commonality of devices is,
22 perhaps, a challenge, I would think. And secondly, the
23 training issue.

1 Linda Dodge: Well, the commonality wasn't an issue.
2 The reason we looked at that was, we wanted to know which
3 particular cameras could broadcast the best, not camera
4 selection, but which phones had the best broadcast for that
5 particular area that we were testing, depending on who the
6 carrier was. And so, we pre-tested the phones and the
7 carriers to make sure we had a carrier and phone that was
8 compatible.

9 Robert Peter Denaro: But that's my point. To do that
10 on a nationwide basis, then, there's a lot of compatibility
11 testing, locally, and all of that.

12 Linda Dodge: Well, I would suspect that a lot of the
13 public safety officers already have cell phones. You're
14 seeing a lot more officers using cell phones, and you're
15 seeing them used them used more than you're seeing them
16 using the hand held, and I would imagine that a lot of them
17 have cameras.

18 And so, if they're purchasing that equipment, in that
19 jurisdiction, then they know whether that works, or not.
20 They wouldn't be deploying phones for the use of their
21 patrols that they couldn't broadcast with.

22 Robert Peter Denaro: Well, you're buying them for
23 voice communications for sure. Whether or not that system

1 is good for transmitting pictures is, maybe, another story.

2 Joseph Averkamp: Usually, you have to buy a data
3 plan, right?

4 Linda Dodge: That's true; however, the first thing is
5 being able to make the connection with the cell phone, and
6 then, it's also determining the sophistication of that
7 phone. And so, there are about three things that they
8 would be doing. But, that would be a local jurisdictional
9 issue.

10 Shelley Row: One thing to be aware of on this
11 project, Linda's giving you one example of-

12 Linda Dodge: There were thirteen projects so, again,
13 Shelly's afraid we're getting bogged down, and I
14 understand. But I wanted to share that, and also-

15 Dr. Adrian Lund: It seems justified.

16 (A bit of laughter)

17 Shelley Row: There's so much to talk about.

18 Linda Dodge: That was one of the accomplishments
19 beyond what we show up here. So again, that is just giving
20 us the opportunity to reduce the congestion and make
21 everything safer, and have a more rapid incident clearance.

22 With regard to the other projects, as I said, there
23 were thirteen. Oh, thank you, Shelley. One thing that

1 came out of this - we had some foundation documents that a
2 lot of this research developed from. And along with that,
3 we had research that was specific to ETO, and we also had
4 related research and publications.

5 So, you will be receiving, in addition to our handy,
6 dandy NG911 help book, you will also be receiving a copy of
7 the CD that was recently published, that has a lot of the
8 ETO research results on it. It's kind of one-stop shopping
9 for a lot of our users.

10 Are there any questions about the ETO?

11 Dr. Joseph Sussman: I would mention that Linda and I
12 were at a meeting where the hope was it would be useful to
13 the emergency operations and the medical application. And
14 it turned out to be very interesting to the medical
15 profession, to have a photograph of the accidents before
16 the patient gets transported to the ER. The surgeons and
17 the responders can apparently learn quite a bit by seeing
18 how smashed up the car was.

19 Linda Dodge: Not only how smashed up, but also
20 direction of injury. Having been a paramedic in the field
21 for a long time, I know it makes a big difference if you've
22 been T-boned and the rotation of the skull, and the brain
23 within the skull, versus if you've been hit head on. So

1 the physicians are more readily understanding of the type
2 of injury they are looking at, and can more rapidly
3 intervene and hopefully provide the appropriate treatment.

4 Joseph Averkamp: When is this program set to end?

5 Linda Dodge: It's ending as we speak. The
6 initiative, itself, closed out last December. This
7 initiative was in cooperation with, as NG911 was, our model
8 partner, NHTSA. This particular initiative was with the
9 Operations Office of Federal Highway Administration
10 Emergency Transportation Office. So, we worked very
11 closely on all of these projects.

12 And that particular CD was even further enriched with
13 some of the documents that were relevant, that came from
14 the Operations Program. It's certainly supplemented, but
15 it is identified. When you go through it, you'll see where
16 they came from.

17 Robert Peter Denaro: Was there a distribution of this
18 CD?

19 Linda Dodge: The CD had a huge distribution. We have
20 a stakeholder list of about two thousand. They went
21 through that particular list. They're going to major
22 conferences, such as ITE, to World Congress, to the
23 communications conferences, and also to our regional

1 offices, and to state division offices, and so on. It's a
2 huge distribution.

3 Robert Peter Denaro: Any other questions from the
4 Committee?

5 Shelley Row: Just so you know, if this is useful to
6 you, with NG911, the total program cost us about six
7 million dollars over about two years.

8 Linda Dodge: Since you brought that up, Shelley, we
9 started out in the early years of talking about NG911,
10 thinking it was going to cost us about eleven million
11 dollars, and because of the pace of the industry, and
12 because of the support of the industry, we were able to
13 curtail the cost to drastically a much smaller amount.

14 Shelley Row: And, ETO was about 5.9 million over a
15 couple of years?

16 Linda Dodge: Over three years, yes.

17 Robert Peter Denaro: Okay.

18 Linda Dodge: Any other questions on ETO?

19 (No response)

20 Linda Dodge: Moving on. Am I in my time frame?

21 Robert Peter Denaro: You're doing great.

22 **Rural Safety**

23 Linda Dodge: Now, the Rural Safety Initiative. This

1 is something where an innovation program - this is a little
2 new. I think you all have been briefed on this in the
3 past, but just to provide an update.

4 Dr. Joseph Sussman: Are we out of order?

5 Shelley Row: There is no - this project has not
6 started yet. It's still in the selection phase, so looking
7 at the red, yellow, green, there's no red, yellow, or green
8 report on this program, because there's nothing to report
9 on yet, because nothing has been selected.

10 Linda Dodge: And, we're just getting ready to finish
11 that process. So, basically, the Deputy Secretary
12 determined that we were doing a lot for the urban areas,
13 with regard to congestion initiatives, but the rural areas
14 certainly had some issues, as well.

15 And a lot of the problems they were having were with
16 regard to the big holidays each year, with running off the
17 road, lack of ability to navigate curves and rural
18 intersections, and so on. So he asked to put together a
19 work group which is multi-modal, in try to determine among
20 the members how we could best fund some of the issues.

21 The Office of Federal Highway Administration, Office
22 of Safety, and the IBBSS Program Office and RITA, combined
23 forces and put together a grant program, or an award

1 program, depending on the amount of money we each could
2 bring to the table. They will be administered by each of
3 the particular offices, separately, but we're working
4 together to be able to maximize the resources.

5 So essentially, what we're looking at with the IBSS
6 Program is, a six million dollar block of money which will
7 include evaluation, as well as technical management of the
8 program. We're hopeful we'll be able to put 5.4 million
9 out on the street in the rural areas, and we're moving
10 along very well in that.

11 It was a multiple-phase process. Basically, we didn't
12 want to overburden the rural areas with a huge application,
13 to begin with. And so, it was basically, kind of a very
14 brief Application of Interest. If you had the money, how
15 much would you need, what would be your target area, and,
16 oh, by the way, you're going to have to provide us data.
17 And by the way, our criteria is going to be set on,
18 basically, what is the risk? What are we going to be able
19 to do? How many lives do you think we'll be able to save?
20 What are your basic problems, and what funding will be
21 required for us to mitigate those issues?

22 So originally, we had thirty proposals. The Federal
23 Register hit the street in February. We had a deadline of

1 May 12 for the initial "We wanted to be counted," saying,
2 "We're interested. Here's our initial information."

3 One thing they had to do was, they had to come
4 together with a partnership. So, in other words, Four
5 Corners, Colorado, USA couldn't just come in with a
6 proposal and say, "Here we are. We're stand alone. We're
7 going to do this." We wanted to know who they were going
8 to work with, other partners within the community, and
9 would they have the support of the state to make sure this
10 could be a successful application, and they would have what
11 they needed?

12 Robert Peter Denaro: Linda, could you give us a feel
13 for the scope of the application? Did you specify in the
14 proposal, what kind of things you were interested in?

15 Linda Dodge: For Phase I, our total?

16 Robert Peter Denaro: Well, for these proposals?

17 Linda Dodge: Well, the initial proposal was, just
18 basically, almost a Letter of Interest.

19 Joseph Averkamp: What does it have to do?

20 Linda Dodge: It has to identify what the problem is,
21 where is the problem located, what roadway? Is this really
22 a rural area? We wanted to make sure it was rural, and not
23 an urban or a near urban area.

1 Robert Peter Denaro: In general this problem would be
2 defined as a safety problem, the cause of severe injury, or
3 fatality? What was the scope here?

4 Linda Dodge: What is the causation? Essentially, we
5 identified what we considered, based on data, to be the
6 most relevant areas. They weren't restricted to that. It
7 may have been intersections and it may have been lack of
8 ability to navigate a curve, or whatever the data supports
9 nationally.

10 Robert Peter Denaro: The data, being accident data?

11 Shelley Row: This is based upon the rural crash
12 problem.

13 Dr. Adrian Lund: I think this is technology looking
14 for an application in the rural area, right? So, you're
15 asking local communities to come up with how this
16 technology might be used to help them?

17 Shelley Row: For our portion - it was a little bit
18 different for the other funding, but for our portion, we
19 needed a technology hook. Is that correct, Linda?

20 Linda Dodge: It is. So, basically, we told them what
21 we thought the problems were in the rural areas, to give
22 them someplace to look. So, okay, here are the areas we
23 think you may be having problems, based on what we know of

1 national data, which comes in from the states.

2 So, then they would look across their states. If the
3 DOT was working with the partners, they looked across the
4 state to help them identify what roads segments had a
5 higher incidence rate of crashes, fatalities, and disabling
6 injuries, and so on. Then, what would be the technology
7 that could help to correct that problem, and how are we
8 going to mitigate those issues, and what kind of impact
9 would it have?

10 So, we were looking for some local demographics, local
11 crash data, and how do you propose to form a partnership to
12 address these, and how much is it going to cost? Just give
13 us the brief information. So then, that was Phase I. And,
14 we had thirty initial applications. Representing twenty
15 four were from DOTs supporting some of the local areas. We
16 had six non-state, which were usually counties. We had a
17 couple of towns. And twenty of those were very much
18 collaborative in nature.

19 So, after we went through the initial round, then we
20 sent out invitations, basically, to those who qualified.
21 We sent out invitations for those to come back for a
22 deadline of July 7, to provide us with an expanded
23 application. Give us your work plan. Give us your budget.

1 Give us a time frame for completion. Give us everything
2 we're going to need, in order to identify how we're going
3 to address this. And, oh, by the way, do you plan on
4 evaluating this, because that was part of the RFP, but
5 we'll be evaluating this?

6 One thing that is different from what we normally do,
7 this is not a high risk innovative research type of thing.
8 This is using known successful technologies, but
9 implementing them in a more innovative way, in a manner in
10 which they haven't been used in the past, or tested.

11 Robert Peter Denaro: So, these plans that came back
12 were requested were to, essentially, choose from a list of
13 technologies you provided, or was it more than that?

14 Linda Dodge: It was much more than that. We just
15 said, "Here are some examples. If you have something
16 innovative, absolutely, we're interested in it. But, if
17 you have a given technology that's been a proven
18 technology, and that's what you want to apply to this, then
19 we're open to that, as well."

20 Robert Peter Denaro: Can you give us a handful of
21 examples of what kinds of technologies we're talking about
22 in the applications?

23 Linda Dodge: Certainly. For instance, it would be
24 ITS related, so no rumble strips, no guardrails. We're not

1 talking pavement and concrete and barriers.

2 We're talking about ITS technology, such as, there may
3 be an aviation technology, such as a runway lighting
4 technology that could be applied to a particular roadway
5 segment, that would help to differentiate the lanes on a
6 two-way road.

7 Curve warnings, basically, that could be, if you're
8 over the recommended speed, perhaps some type of dynamic
9 message sign would be flashing to tell you that there's a
10 curve ahead and you're exceeding the speed limit.

11 Shelley Row: Radar for curve speed warnings,
12 hydroplaning?

13 Linda Dodge: You like that one? We have some of the
14 reviewers in the room that we can talk to, specifically.

15 Shelley Row: Before we get too far out on a limb
16 here, these have not been selected or unannounced?

17 Linda Dodge: We're in the peer review process.

18 Robert Peter Denaro: That's good. We just wanted the
19 flavor. We're coming from ignorance, okay?

20 Linda Dodge: Okay, but we're doing a little dance
21 here, because we don't want to say how many actually came
22 in, and we don't want to say how many we're going to be
23 able to fund, but we have a target funding of 5.4 million.

1 Dr. Kenneth Button: I always find there's a danger in
2 these sort of things, when you come along. I was involved
3 in an exercise in Virginia, where suddenly, somebody came
4 along with some new forms of call boxes, and installed
5 them, and discovered everybody had a cell phone anyway.
6 And they were not used at all.

7 But, because we were offering something, and it was
8 where the problem was perceived before the technology was
9 put in front of them. When you look at these proposals,
10 are you looking back at the track record of people in the
11 countryside, to see if they actually do have a problem,
12 rather than inventing one?

13 Linda Dodge: Absolutely, because they have to provide
14 the data, and the data has to be able to support that.

15 Dr. Kenneth Button: Not data, but, for example,
16 discussions with local councils and agencies about the
17 problems before them. I'm not worried about numbers, I'm
18 worried about whether there's an actual perceived problem.
19 You can always make up a problem. That's not too
20 difficult.

21 Linda Dodge: If I can just talk about the term,
22 "perception." That's a good point, because you and I, in
23 our neighborhoods, we always perceive that everybody is

1 speeding but us. And so, is this a perception of a
2 problem, or is that perception backed up by reality. And,
3 in fact, the data proves that.

4 We have not asked them to provide City Council
5 minutes, or anything of that nature, but in some instances
6 they did. In most instances, they provided letters from
7 their partners, indicating why they felt it was a problem,
8 and what had been done to date about it, and their
9 concerns.

10 We were interested in knowing if they had already been
11 identified and placed in the Highway Safety Plan for the
12 state. So, it had risen to that level of interest and
13 concern.

14 Robert Peter Denaro: It sounds like the technology
15 that is being suggested could be both infrastructure, which
16 they control, and in-vehicle, which they don't control.

17 Linda Dodge: No, we did not pursue any.

18 Robert Peter Denaro: That's on the side of the road.
19 So, it was all local infrastructure based?

20 Joseph Averkamp: I don't want to get afoul the
21 procurement process, but what would be the basis for
22 assessing whether or not a proposal is a good idea, is
23 based on the number of accidents reduced, fatalities?

1 Linda Dodge: I didn't bring the specific criteria
2 with me, Shelley, but yes, it has to do with the impact -
3 the potential impact has to do with the ability to deliver
4 this particular, whatever, the implementation of what this
5 particular grant would be. Do they have a good opportunity
6 for success?

7 Robert Peter Denaro: Do you have any more information
8 about this? I wanted to ask the Committee about some
9 questions, referring to it?

10 Linda Dodge: I have a couple of quick things in the
11 review process things that I can share with you, that I
12 think will give you a little better feeling about it. The
13 review teams that were put together for Phase II, we made
14 sure that at least two reviewers reviewed every particular
15 application.

16 One of those reviewers is a subject matter expert at
17 ITS in that particular area of technology. And the other
18 person was a subject matter expert in highway safety. And
19 in fact, some of them, of course, were cross-qualified.

20 And then, in addition to that, the DOT team, the
21 partners from Federal Highway, and the ITS Program Office
22 that are managing the project, also read the applications.
23 And, our particular bosses have been briefed, but sworn to

1 secrecy. We hope that the Secretary will make an
2 announcement on or around the 18 of August.

3 Robert Peter Denaro: So, what I wanted to do for the
4 Committee here was, although this is new and there's not a
5 lot of specificity yet, because you haven't done the awards
6 and so forth, I think it is a good chance for us to test
7 our process here.

8 So, just to quickly walk through the questions, is it
9 likely to advance the state of progress? Any comments on
10 that?

11 Scott Belcher: I think this is important work, and I
12 think it gets lost.

13 Robert Peter Denaro: Because it's rural?

14 Scott Belcher: Because it's rural.

15 Robert Peter Denaro: I agree.

16 Scott Belcher: And so, I think the amount of money
17 that's in play is not huge, but if it's done right, and I
18 do think it will be done right, we have an opportunity,
19 really, to advance things incrementally. So, I think it's
20 a good idea.

21 Randell Iwasaki: I think that, not that we don't have
22 an application, but I think we have an opportunity to match
23 different technologies together, to showcase the fact that
24 you can take technology for rural applications and save

1 lives. The problem is you don't get a lot of spreading the
2 word.

3 So, in California, we put - actually, I was the
4 Project Manager back in the mid-90s on a fog warning system
5 that kind of stayed there, but we never expanded it. And
6 it was in a rural area of Interstate 5-205, and we
7 eliminated all fog-related accidents. But even in our
8 state, we didn't expand it. We're just expanding it now to
9 Highway 99.

10 Robert Peter Denaro: So, that's kind of an employment
11 issue?

12 Randell Iwasaki: Yes, so these projects help overcome
13 some of those barriers because once again, the federal role
14 is to document some of the hardships we've had in the
15 states, to implement this kind of technology.

16 Dr. Kenneth Button: I like the idea. I think you
17 should be very careful in selecting things. In my neck of
18 the woods, one clearly that needs work is deer detection.
19 Deer are the biggest menace for drivers. I'm not quite
20 sure whether you can do anything on this.

21 But there's a bit of danger sometimes when you put
22 this kind of proposal out that, given the resources that
23 are available to these rural communities, that may adopt,

1 or seek, whatever, a high tech solution to where a low tech
2 solution, if you will, may be more cost effective and
3 efficient. Is that kind of thing being looked at?
4 Alternatives to the ITS approach? Because ITS is not the
5 only way of approaching problems.

6 Linda Dodge: Well, if it wasn't the appropriate use
7 of that particular technology, and if there was something
8 else that was more appropriate than that particular
9 application, then it would bubble to the top.

10 Dr. Kenneth Button: That is assessed?

11 Shelley Row: It would be assessed, but it wouldn't be
12 funded with ITS money then.

13 Dr. Kenneth Button: But, I'm just saying, you do look
14 at alternatives which are low tech, as well as high tech?

15 Linda Dodge: Which is a good point, because there are
16 other funding mechanisms through the Federal Highway
17 Administration, that some of these are being bumped to.
18 And we might say, "Hey, you might want to look at this
19 particular application," or "You may want to seek funding
20 under this particular opportunity." And so, they're not
21 necessarily put in the trash can.

22 Paul is one of the reviewers.

23 Voice: Well, the states go through safety audits, and

1 they look for exactly those types of things. And in fact,
2 some of the proposals talk about the lower cost, lower
3 sophistication types of applications that they can and are
4 doing, and they're looking at how else might technology
5 come in?

6 So, there's definitely, through the Road Safety Audit
7 Program, looking for the other opportunities to solve the
8 safety problems.

9 Linda Dodge: And, some of them make commitments that
10 if it proves to be successful in this particular area, we
11 will commit to do it in other areas of our state. Now,
12 that's a nice added touch.

13 Robert Peter Denaro: Are there any other comments or
14 questions on the deployment?

15 Dr. Joseph Sussman: Linda, if I'm understanding this
16 correctly, this will extend beyond the end of SAFETEA-LU,
17 is that correct?

18 Linda Dodge: It's going to depend. I hate that
19 question.

20 Dr. Joseph Sussman: I pride myself on asking those
21 kinds of questions.

22 (Laughter)

23 Linda Dodge: Technically, it could, but simply

1 because some of these are, maybe, a year long, some of them
2 are two years. And then depending on the level of data
3 that we need, we may go a little longer to make sure we're
4 able to validate the results, so that when we attempt to
5 replicate this, or offer it for application in other areas,
6 we will have a good proof.

7 Any other questions?

8 Joseph Averkamp: I guess my only observation would be
9 that I think it's a good program, and we're not prescribing
10 a solution. We're soliciting for them. I think at an
11 early stage, this is a good approach.

12 Robert Peter Denaro: Okay, great.

13 Linda Dodge: Am I free to go?

14 Robert Peter Denaro: Yes.

15 Linda Dodge: Thank you very much.

16 Shelley Row: One thing to note on this particular
17 project. If you look at your Budget Summary document, you
18 will not find this one on here. This is an example of a
19 project that was added, where the administration felt like
20 there was an important issue here, though six million
21 dollars was added in the FY'09 budget to cover this.

22 Randell Iwasaki: So, that's the total amount of
23 money? So, you can fund a project up to five million?

1 Linda Dodge: No, the RFA clearly indicated there was
2 a maximum amount. I don't have it in front of me. I want
3 to say, two million was the maximum. Oh, that did say, not
4 to exceed five million. I stand corrected. I think it
5 said two, but I'll have to go back and check.

6 Scott Belcher: Don't get greedy, Randy.

7 (Laughter)

8 Linda Dodge: I will get back to you on that.

9 Randell Iwasaki: My only point is, if you give one
10 grant up to five million, then you don't have much left for
11 other people.

12 Linda Dodge: Let me just say, we've had a lot of
13 applications.

14 Randell Iwasaki: I'm not trying to pin you down for a
15 "yes," here.

16 **Integrated Vehicle-Based Safety Systems (IVBSS)**

17 Robert Peter Denaro: Is IVBSS next?

18 Shelley Row: Yes, IVBSS is next, and this is Steve
19 Sill. Steve is the Project Manager for IVBSS, among
20 several other duties, as well.

21 Steve Sill: Good morning. I'd also like to introduce
22 Jack Terrence, who is back in the audience. Jack is NHTSA
23 employee. He is the day to day Project Manager for IVBSS,

1 and he is here if for no other reason than to correct me if
2 I get it wrong during the questions and answers. He does
3 this stuff every day.

4 Just to refresh your memory about the program, IVBSS
5 is one of the major initiatives at ITS JPO. It's a thirty-
6 five million dollar project, originally intended for four
7 years, and now slightly longer than that, to develop, and
8 then if successful in the development, to field test in the
9 real world, an integrated collision warning system that is
10 on the vehicle.

11 It does not need to communicate with other vehicles,
12 and is fully effective, regardless of the equipment on any
13 other cars. So, it protects against lane change merge,
14 which is where you may move into another lane, and there
15 may be a car there, or a car may be moving toward you, or
16 road collision and road departure. And in the case of the
17 car system only, it also has a curve speed warning
18 capability.

19 These crashes represent about 60% of the reportable
20 crashes, and so we're talking about a very significant
21 chunk, potentially, of the 40,000 fatalities every year.

22 Now, in the case of IVBSS, we're looking at both an
23 automobile system, and a heavy truck system, and both of

1 these systems will be tested in the field for a period of
2 one year.

3 To date, we have completed Phase I, and what we have
4 seen so far is that we have fully tested the system. It
5 has demonstrated very good performance and very low false
6 alarm rates. It has fully met all of its performance
7 requirements.

8 We have also developed an intuitive platform specific
9 human-machine interface. And, the reason I mention
10 platform specific, is because both the training and the
11 physical environment are very different in a heavy truck
12 than they are in automobiles, so the types of warnings
13 provided to the driver need to be different if you want to
14 elicit the correct responses.

15 And, although you could argue that these technologies
16 have individually entered the marketplace on some high-end
17 vehicles, this system is the first integration of all of
18 them on a single vehicle, with the capability to prioritize
19 and arbitrate between warnings, and present these warnings
20 to the driver in a way that they are not overwhelmed or
21 confused by multiple warnings. And in that sense, it very
22 much is an advance in the state of the art.

23 Now, there's no question that the equipment, as

1 installed on these proof of concepts, essentially pre-
2 production prototype maturity vehicles, is far too
3 expensive. If you wanted to build yourself a seventeenth
4 car, and we have sixteen, it would cost a lot of money, but
5 there's nothing that would preclude a widespread adoption
6 and a much, much lower price point, with high volume
7 purchases.

8 The primary partners here, in the case of the car, are
9 Visteon, and in the case of the truck, Eaton. Both are
10 pier one suppliers to their industries, and we would expect
11 that products based on some of these technologies developed
12 here, will be entering the marketplace relatively soon.

13 But the fact remains that this is an intensely
14 competitive market, and they're certainly not going to talk
15 publicly to anyone about what they're going to be offering
16 next year, or the year after that, to their customers.

17 Scott Belcher: Steve, who is the heavy vehicle
18 partner? I didn't hear you.

19 Steve Sill: It's Eaton that's the supplier of the
20 system, International Truck is the supplier of the truck,
21 and then Conway is the field demonstration partner.

22 Dr. Adrian Lund: You said this is the first time all
23 these systems have been in a single vehicle. Could you

1 list those systems again?

2 Steve Sill: For the car, we have curve speed warning,
3 but we don't have it for the truck. For both vehicles, we
4 have forward collision warning, lane change merge, and road
5 departure warning. Lane change merge is radar based,
6 forward collision is radar based, and road departure is
7 vision based. And, we've also added all of the logic, to
8 arbitrate and prioritize warnings, so it is an integrated
9 warning system.

10 Dr. Adrian Lund: Are there cars on the market which
11 have all of these systems now, except for curve speed
12 warning?

13 Steve Sill: I don't believe anyone is selling
14 anything that has all three of them on the vehicle. You
15 can buy things from different manufacturers. We're not
16 aware of anyone who has a system that integrates the
17 warnings, and prioritizes and arbitrates between them.

18 The other thing, and this is more intuitive than it is
19 scientific, is the performance we've seen from this system,
20 especially the false alarm rate, appears to be far better
21 than what is on the marketplace today.

22 Dr. Joseph Sussman: Steve, again, to test Bob's
23 process here, can you help us out with understanding why

1 there is a federal role in developing in-vehicle
2 technology?

3 Steve Sill: I can certainly try. There are two
4 primary interests here. One is internal, in that absent a
5 field operation test of a system like this, where we give
6 it to real truck drivers in the real world, and we assess
7 its effectiveness, there's really no easy way for NHTSA to
8 know just how much these systems might enhance safety.

9 The alternate example there is electronic stability
10 control, which made its way in the marketplace, and after
11 many years of statistically valid data, it became obvious
12 that it is an enormous safety benefit, and it's not
13 mandated.

14 But, even look at the amount of time that took, and
15 how many lives were lost in the interim. You would argue
16 if there is a better way to know in advance how many lives
17 you might save, then you can hopefully take appropriate
18 regulatory action soon.

19 Robert Peter Denaro: So, is this project going to
20 attempt to measure that?

21 Steve Sill: Yes, to the extent we can, will field
22 operational tests.

23 Robert Peter Denaro: I think you said, the likelihood

1 of encountering these events would be small, because of the
2 amount of time.

3 Steve Sill: The likelihood of an actual crash is very
4 small; however, the data acquisition systems were
5 sophisticated. So, when you get an event that results in a
6 warning, we can review the event, we can review the
7 multiple camera video, the audio, and we make a judgment.
8 Did the system prevent a crash here?

9 And, it tells us a couple of things. First, it tells
10 us how many close calls there really are when the average
11 driver gets in a car. And how many times we see the driver
12 react to avoid a crash, based on the warning, specifically,
13 rather than when the guy honks his horn or when he later
14 realizes. So, you can make inferences there on how many
15 crashes this might prevent.

16 Now, we haven't got the kind of budget it would take
17 to put hundreds of cars out there, and run millions of
18 miles, such that we expect to get hundreds of crashes.
19 But, we're doing the best we can, and we do believe we've
20 done fairly extensive analysis and we do believe we'll get
21 statistically significant data.

22 Robert Peter Denaro: Is one of the outputs of this,
23 when you said 60% of crashes are from these causes, and

1 take one of them, road departure, okay?

2 Steve Sill: That is one that has a relatively high
3 proportion of fatalities.

4 Robert Peter Denaro: So then, you have good
5 statistics now on what you believe the number of crashes
6 were fatalities for road departures?

7 Steve Sill: Sure.

8 Robert Peter Denaro: Will this project attempt to
9 estimate what the reduction would be?

10 Steve Sill: Yes. Further, if the federal funding
11 here, and the federal role accelerates the implementation
12 of these types of technologies, just by even a few weeks,
13 if you look at the number of fatalities, all of a sudden,
14 the thirty five million dollars doesn't look like a
15 terribly high cost in the scheme of things.

16 Robert Peter Denaro: Europe just mandated lane
17 departure. For example, they took RESC and they said,
18 "We'll trump you, we'll one up you." And in fact, they did
19 the collision avoidance, with collision mitigation, as well
20 as lane departure for heavy vehicles.

21 And they're looking at some kind of data. I don't
22 know what kind of data they're looking at, although I've
23 seen the rumble strip data, which maybe is an analogy,

1 potentially. And so, that is what you're trying to do,
2 too, is gather some of this data so that we can make early
3 decisions?

4 Steve Sill: Yes, you can speed the decision. Even if
5 there is no regulatory decision, the fact remains that
6 under the new end cap, the presence of lane departure
7 warning, and the presence of forward collision warning on a
8 car will indeed be shown on a sticker.

9 And if we have data here that is publicized, and say,
10 "Hey, these are really good things," those things, in
11 combination, would cause more people to buy it, we hope.
12 Recognizing that we do believe the technology can come down
13 to an affordable price point fairly quickly, in which case,
14 you get pretty good benefits.

15 Dr. Kenneth Button: I would come back to comparing
16 this to the Federal Drug Administration, where these costs
17 are actually borne by the public sector. And, in the
18 Federal Drug Administration, they do all the testing, and
19 the government looks at their test to see if it is
20 appropriate for the drug to go on the market.

21 The federal role is, basically, to assess the results
22 produced by the drug companies. And if the drug,
23 basically, produces benefits, you accept it. And if it

1 doesn't, you reject it. You compare the side effects with
2 the primary reaction.

3 Now, this seems to me entirely different in this
4 approach, where you are actually doing the testing of it.
5 I would have thought there would be markets out there, like
6 the insurance market, which is probably driving away a lot
7 of cars, because certainly in many parts of the world, when
8 you have these technologies fitted in the vehicle, these
9 countries in the world with market mechanisms, when you've
10 got the technology, you've got a significantly reduced
11 insurance premium. And that's a big incentive for drivers
12 to take it up in the private companies, to adopt them.

13 I understand you want the information, so if you can
14 ratify a technology, which the insurance company says is
15 safe, your insurance premium goes down. But I'm not quite
16 sure what the federal role should be, beyond that in the
17 market system?

18 Steve Sill: But, the insurance industry, I would
19 expect, and I'm certainly not an insurance, I mean, this is
20 not my area of expertise, but I would expect an insurance
21 company would base their premiums on risk data. And,
22 absent many million miles of field experience with these
23 types of systems, they would not know whether, or to what

1 extent, to have premium reductions.

2 Dr. Kenneth Button: But, isn't that what the private
3 sector does, when it markets the product?

4 Steve Sill: But, if you wait for those millions of
5 miles and those numbers of years of experience, if the
6 system was indeed successful, you have missed the
7 opportunity to prevent many crashes and many fatalities.
8 And, if we can accelerate the ability to acquire that
9 knowledge at a relatively modest cost, we believe that to
10 be an appropriate federal role.

11 And further, fundamentally, the Food and Drug
12 Administration model is a very different model than the
13 transportation research model. And we do, indeed, do this
14 in many areas of transportation research, where we fund the
15 research to develop, and then to field test, the
16 technology, and then to publicize the data. And in some
17 cases, we mandate the technology, both on the
18 infrastructure side and on the vehicle side.

19 Dr. Joseph Sussman: Are you are arguing as a market
20 failure that is not in the enlightened self interest of
21 General Motors or Honda to just do this stuff, and create a
22 better position for themselves in the marketplace?

23 Steve Sill: I wouldn't argue it's a complete failure.

1 I would argue, though, that by priming the pump, we can
2 accelerate the speed at which these are addressed, and
3 looking at the fatality rate, that that's probably a pretty
4 good investment. And further, we get the knowledge of the
5 systems performance that we wouldn't get from the
6 manufacturer, directly.

7 Scott Belcher: There is a market failure, but it is a
8 different market failure. It's a market failure, in that
9 many of us are not willing to pay incremental costs to get
10 these safety applications, because we don't think we're
11 going to be the one in the accident. We don't think we're
12 going to be one of the 42,000 people. And so, it may be
13 that there's a federal role in trying to make that happen.

14 Robert Peter Denaro: I would ask Tommy at Honda.

15 Steve Sill: Note that Honda is our automobile partner
16 in this program. Full disclosure.

17 Robert Peter Denaro: My question is, would Honda, or
18 any other auto company, find this information useful and
19 valuable?

20 Tomiji Sugimoto: Yes, I think so; however, there has
21 been the study in the similar feature, where technology,
22 and also, the key is as you've said, initially, the study
23 is very, very good for NHTSA to understand what is the

1 advance safety technology, or something like that.

2 And also, it is a good chance to consider about how to
3 make an integration for the warning system, or something
4 like that. So, either the OEM and government study has to
5 be corroborated with each other in the future. I don't
6 know how to say it, but I think the research, not only the
7 OEM, but also the government.

8 Dr. Adrian Lund: Can I just make a comment? Part of
9 this is, I think, a misunderstanding about how much faster
10 something like Electronic Stability Control could have gone
11 into the market. If you look at ESC, it's a record pace
12 with which it went into the market without any government
13 intervention. So, I think there is a role for the federal
14 government to understand how this technology is working.

15 But, if you think that it's going to accelerate the
16 speed with which auto makers are coming up with this
17 technology, or other people are coming up with this
18 technology, everybody is looking for new technology to
19 sell, so that is happening. So, I don't think we could
20 have made it go in any faster.

21 Look at the current side impact rule making at NHTSA,
22 which by 2016 will require that all side air bags provide
23 head protection. Auto makers have agreed that every

1 vehicle will have side air bags with head protection by
2 next September. This is not - and it is for other reasons,
3 competitive reasons. We do crash tests that show the
4 difference, and so on.

5 So, we have to be careful with what we think is going
6 to happen, in terms of driving this into the market. But,
7 the government does have a role in understanding and
8 helping all of us understand what are the real effects.
9 So, this is good, from that perspective.

10 Steve Sill: I would argue that even the smallest
11 acceleration, even if it's only a few months, still offers
12 substantial benefit.

13 Dr. Adrian Lund: But, I would also point out that
14 when you do this study, you still won't know what the real
15 world effect is. It's very important. All you know is,
16 how are drivers responding to it, and is it giving the kind
17 of information that you expect it to give, and are drivers
18 sharing that?

19 But, you won't actually know what drivers do with
20 their behavior in response to all of this new information
21 that you are giving them. And, that is an important
22 concept. People change what they do in driving, if the
23 driving task changes.

1 Dr. Kenneth Button: The seat belt problem.

2 Shelley Row: I have a comment and a question. Let me
3 do my comment, then I want to ask a question on what you
4 just said, Adrian.

5 I wanted the Committee to be aware, and Jack you're
6 still here. I don't want to put words in NHTSA's mouth,
7 but I wanted to reflect what we've heard in discussions
8 with NHTSA, because I had the exact same questions, by the
9 way, about this project when it first started. So, I think
10 they're very valid questions.

11 When we talked to NHTSA about the regulatory role that
12 they serve with the automotive industry, they're obviously
13 very interested in getting proven technologies into
14 vehicles that can help save lives, obviously. The process
15 in the federal government to do that is an extremely
16 lengthy one that is heavily data reliant. And they have
17 been interested in accelerating that process, because they
18 think that if they can get the data they need to feel
19 comfortable with a rule-making action, that it can in fact
20 save lives. And, it could accelerate that.

21 So, they've been looking across the board at ways to
22 accelerate the process and their data collection approach
23 which, up to this point, has been mostly driven just on

1 field experience once it's deployed in a vehicle.

2 So they've been looking at, can you do operational
3 tests, can you do modeling, can you do simulation, can you
4 do some of the things that help them be comfortable,
5 sooner? So, that is what NHTSA is trying to do, is to give
6 them comfort sooner than it would have otherwise. That is
7 the statement I was going to make.

8 Now, the question I had, coming back to your point,
9 Adrian, is we are believing, and I think NHTSA believes,
10 that through their combination of the NCAMP Program, Stars
11 on Cars, and the regulatory possibility, the wonderful
12 thing about a regulation, you don't have to actually do it,
13 you just have to talk about doing it, and that actually
14 works.

15 It's a wonderful thing that that combination of levers
16 that they have, in fact, does help motivate driver
17 purchasing decisions, and helps motivate the industry.

18 Now, are you saying you don't believe that's true?

19 Dr. Adrian Lund: It is true, to a small extent, but
20 let's take the case of Electronic Stability Control, right
21 now. We're trying to hasten people's purchase decisions
22 for that, but the fact is that despite, now two and a half
23 to three years of really intense publicity, I'm guessing

1 that somewhere around 85-90% of people out there have no
2 idea of what we're talking about when we say their next car
3 should have Electronic Stability Control. It's known by a
4 number of different trade names among the automobiles, and
5 so on.

6 So, what it has done, though, is, you're right, it
7 does have the effect of motivating manufacturers to get it
8 out there, because there are a certain amount of informed
9 buyers who are reading, there's an informed press who are
10 reading, and no manufacturer wants to have their car listed
11 as behind the curve on anything new. I don't want to
12 minimize that there's an impact, but I think we're greatly
13 overstating what it is, too. Nevertheless, there is a role
14 in knowing what the actual effect is.

15 Steve Sill: And we, what UMTRE has done in the past,
16 and what we see on the in-car video, and on the data
17 acquisition is, it doesn't take long for the drivers who
18 get these vehicles to go back to their old habits. Just
19 days after they get their car, they get used to it, and you
20 start to see all of the behaviors you would expect in the
21 real world when you're looking at a warning, when you see
22 the cheeseburger in one hand and the coffee in the other
23 hand, and steering with the elbows, and all of the other

1 kinds of behaviors that we, unfortunately, see a great deal
2 of in the real world. And so, in that sense, we get a
3 reasonable indication of how we would expect people to act
4 in a vehicle.

5 Now, what we can't, of course, get is a one year FOT,
6 where someone gets a car for six or eight weeks, and
7 basically the truck driver drives it for a year. What we
8 can't see is how people might adapt a year down the road,
9 or two years down the road, with tens of thousands of
10 miles, working with the system. And, unfortunately, other
11 than spending the money to put that many cars out there for
12 that long, I don't think there's anything we can do there,
13 although, I'd probably have to ask an engineering
14 psychologist about that.

15 Robert Peter Denaro: I want to make one comment, too,
16 from my personal experience. And, obviously, I'm looking
17 at the maps, which is a part of this effort, as well. It
18 may or may not be important to some of the other
19 applications, but I've done a lot of talking to OEMs, as
20 well as some of the system providers here, and my
21 experience is that they are desperately wanting this kind
22 of information.

23 Because it's my opinion, that the decisions made by

1 private companies about what to invest in is, yes, there's
2 a piece of, that this is the right thing to do and so
3 forth. But let's face it, a large part is, what is going
4 to sell? And they do not want to spend millions of dollars
5 inventing a system that is going to be an option that no
6 one orders.

7 And there's a lot of that that goes, especially in
8 today's environment, that goes into those decisions. If
9 there is data available to say, "Gee, if we do this, the
10 data are significant enough that, probably, people will
11 respond to this," that helps a lot. So, I would argue in
12 favor, and I think it will accelerate the possible adoption
13 of these kind of technologies.

14 And the other piece is the publicity to people.
15 Adrian is exactly right. People don't understand what ESC
16 is, but that doesn't mean we should not try to get the
17 information across. We've got to figure out ways to
18 communicate to people, and that's one of the statements I
19 make in speeches I do on this subject, is everyone says
20 safety doesn't sell, no one wants to order a safety system.
21 And a lot of times car companies don't want to say, "Gee,
22 this car used to not be safe, but now we have this option,
23 so now it is safe." They don't want to go there.

1 But, as soon as there's data out there that can be
2 collected by NHTSA, or the insurance industry, or anybody
3 else that says, this particular model of car, because of
4 this feature, seems to be having about, pick a number, 55%
5 fewer accidents. When that data is available, I think it
6 will create a pull for people, and we've got to get to that
7 point in time, somehow. So, I do believe this kind of
8 effort helps.

9 Bryan Mistele: When the project, which was originally
10 described, was "We're building sixteen cars, and we're
11 looking at the interaction between these HMI
12 notifications." That is different from what the two of you
13 are talking about, which is kind of a broad study of
14 collision avoidance systems, and similar technologies, and
15 figuring out what the overall impact would be. I'm not
16 sure this project gets to where you want to go.

17 Robert Peter Denaro: That's why I asked the question
18 of Steve, are you actually going to try to estimate, for
19 each of these crash types, what the likely decrease might
20 be? But, I agree with you. What we heard was, just
21 looking at the integration, does that create issues and so
22 forth?

23 Steve Sill: To clarify, although we will indeed try

1 to estimate the expected reduction in each crash type, it
2 is only valid for a vehicle equipped with the integrated
3 system.

4 Robert Peter Denaro: Good point.

5 Steve Sill: And so, if you were to run three separate
6 field trials, one at point of departure, one lane change
7 merge, and one forward collision warning, but there was
8 only one type of warning transmitted to the driver in each
9 vehicle, and only one type of crash protected against, it's
10 entirely possible that you would see different expected
11 rates of crash reduction.

12 So, we will see what we expect for each type of crash,
13 but it's only in the scheme of the vehicle that it's
14 capable of providing multiple warnings. And, we might
15 expect somewhat lower effectiveness there for any given
16 type of crash because of the risk of confusion, and an
17 incorrect response to a given warning. You know, swerve,
18 when you should have slammed on the brakes.

19 That said, we would expect the overall benefit to be
20 greater for a system that protects against multiple crash
21 types than we would expect that benefit to be for a system
22 that protects against only one, even if it is more
23 effective at protecting against that only one.

1 Tomiji Sugimoto: There is another research called
2 ACAT, to estimate the effectiveness of the system in the
3 market.

4 Robert Peter Denaro: What is that study?

5 Tomiji Sugimoto: ACAT.

6 Steve Sill: And, there was also the Road Departure
7 Collision Warning, which dealt with curve speed warning and
8 departure crashes, only. And that was JPO funded, and Jack
9 managed it. And, in the case of this program, we have made
10 an effort to release far more data than we have in the
11 past, to the public. All of the human factors research
12 work and the results are out there, publicly. The
13 verification test procedures we're using are out there.

14 And, we're trying very hard to be as transparent as
15 possible, and make the information and results we have
16 available to the public, as soon as we can.

17 Robert Peter Denaro: We probably have to move on
18 pretty soon, but I just want to ask under the three
19 questions, the advanced state of the art, and can it be
20 deployed, and the appropriate role for government? Are
21 there any other comments or questions from the Committee?

22 Dr. Joseph Sussman: Well the issue is joined on that
23 last question. I think there are a lot of different

1 opinions on that question.

2 Robert Peter Denaro: I agree.

3 Joseph Averkamp: The only observation I would make is
4 that, this is a thirty five million dollar program, so I
5 think you also have to view it in the context of, how does
6 it stack up against a five million dollar program, and
7 also, how to use the funds in a different way? We have to
8 be considering them.

9 Shelley Row: I was just going to make a link from
10 yesterday's discussion. This is the vehicle that will be
11 at World Congress that will have limited ride
12 opportunities, because you have to go a ways to be able to
13 experience some of the warning systems. But, the physical
14 vehicle will be there, and UMTRE will also have a
15 demonstration.

16 Robert Peter Denaro: Is this the 11th Avenue?

17 Shelley Row: No, it is not.

18 Steve Sill: The warnings will function, generally,
19 only above twenty five miles an hour. Below that, it's
20 impossible to get a reasonable false alarm rate. Further,
21 at the lower speed, you're generally not looking at high
22 severity crashes.

23 Robert Peter Denaro: Is this the Long Island one?

24 Steve Sill: It will be available for some very

1 limited demos, and we'll probably end up having to cross
2 into New Jersey and get onto the turnpike, where you can
3 exceed twenty five miles an hour, I guess, during that
4 limited non-rush hour time.

5 Just very briefly on the program status, the program
6 is mostly funded. Phase I was completed. We just started
7 Phase II. This year, we expect to obligate just over two
8 million dollars - 1.99 million are obligated, as of today.
9 Next year, 1.2 million, most of the funds required are
10 obligated in previous years. Next year is 1.2, we expect,
11 unless there is some horrendous cost overrun. And in the
12 next year, we expect to complete the fleet build, and
13 complete the pilot FOTs.

14 Experience has taught us that when you think you're
15 ready to go with the full scale FOT, you probably aren't.
16 And it is prudent to try a small pilot first, to make sure
17 you have the best practices. And then, we'll initiate the
18 year long full scale effort. I guess now, Valerie is going
19 to cover VII, if there are no other questions for me.

20 **Vehicle Infrastructure Initiative (VII)**

21 Valerie Briggs: Mike Schagrín chose a really good
22 week to be on vacation. I can talk VII, and make up some
23 things on CICAS, and see if you know the difference.

1 (Inaudible)

2 So, let's start with VII. I'm told that you want
3 results, and the big result are bullets two and three.
4 This year, we've actually done the proof of concept test
5 for VII. I'm assuming all of you know that VII is -
6 Vehicle Infrastructure Integration. That's a cooperative
7 program between US DOT, all the states, and the automobile
8 industry, to develop an information infrastructure for
9 exchanging data for safety and mobility applications. It
10 started in 2004, and this year we actually did the proof of
11 concept test, and we're getting results now, and it will
12 continue through September.

13 But, what we're learning is, the architecture works
14 for the most part. It is not without its challenges. We
15 found the DSRC Standards to need to be tweaked, but
16 generally, the architecture works. We can exchange data
17 between vehicles and other vehicles. And a big
18 significance there is, vehicles of different manufacturers,
19 and that's the second bullet. And that is one of the big
20 reasons the government is involved in this, because it
21 requires cooperation between the vehicle manufacturers, the
22 different manufacturers.

23 Bryan Mistele: Is this still Wi-Fi, where the local

1 sensors are along the road?

2 Valerie Briggs: It's both vehicle-to-vehicle, and
3 vehicle-to-infrastructure. It uses the Wi-Fi, yes and no.
4 It is built on a wireless, the DSRC communications
5 protocols are built on 802.11 standard, which is also the
6 standard that is used for Wi-Fi, but it is not your classic
7 Wi-Fi. We've adapted Wi-Fi for the vehicle environment,
8 where the vehicles are going seventy miles per hour.

9 And, one of the big issues there is whether you can
10 start a transaction within the range of one roadside unit,
11 and pick it up within another. And you have to be able to
12 start that transaction very fast, because you're traveling
13 at seventy miles an hour, or sixty five miles an hour, and
14 it could take two or three seconds to get that connection,
15 and you've probably lost your ability to do a transaction.

16 So those are the sort of things we're discovering in
17 the proof of concept test. You can do a transaction very
18 quickly. You can continue a transaction from one RC to
19 another. Those are the sort of things we are learning. We
20 haven't finished the proof of concept test. We expected to
21 do that in September, and have the results in October.

22 We also updated the cost analysis. We started it last
23 year, and with this one, we really on some of the

1 institutional issues, because we really hadn't started that
2 before. And, we have to look at, how do we make this work?
3 And, of course, that's the real challenge. So, we've
4 started some work with the auto industry, looking at what
5 are the legal parameters that we need to be concerned with,
6 as well as looking at, what should the institutional
7 framework be for implementing this?

8 Also, we've started a lot of public awareness
9 activities. This has been criticized for being a closed
10 program, and we want to change that. We have implemented
11 a website this year, but we also expect to really step up
12 public outreach activities in the coming year, reaching out
13 to new communities that we haven't worked a lot with in the
14 past.

15 Another thing that happened this year was, Safe Trip-21
16 was implemented. You heard about that yesterday. We also
17 have been looking at what happens after the proof of
18 concept test? This initiative is one that our
19 administrator is very interested in, and has had some real
20 strong opinions about. So, for the last nine months or so,
21 we have really been looking at, what happens after proof of
22 concept, and how do we make this program into something
23 that can really be implemented in the real world? And,

1 what does that mean? So, we've been going through a real
2 program redefinition over the past nine months.

3 The budget this year was 16.2 million. I would say
4 that was under what was originally scoped. And a lot of
5 that was for the proof of concept testing.

6 Dr. Joseph Sussman: Valerie, in the written material,
7 the term "re-scoped" was used. Here, you talk about a new
8 program direction. I'm having a little trouble getting my
9 arms around what the changes were. What have been the
10 changes that have occurred?

11 Bryan Mistele: And, I would say, what was the
12 feedback from the administrator that led to the changes?

13 Valerie Briggs: There have been a lot of issues.
14 This program was really started, and put inside of a box,
15 and the box was DSRC, and that is a dedicated spectrum that
16 the FCC set aside in 1999. We were looking, specifically,
17 at what could be done with the DSRC-based infrastructure.
18 And, the administrator came in and said, "DSRC is fine, but
19 there are many other technologies out there that we should
20 also consider. And, how do we make all of this work with
21 other technologies, too?" That was one of his big points.

22 Another big point was, how do we implement this?
23 There has been very little discussion of how this was

1 implemented. There was an assumption the government was
2 going to take on a major funding role, and as all of us are
3 aware, this is a very difficult thing in this environment.
4 We're already in a very tight budget situation, and our
5 administrator asked, realistically, is that possible? And,
6 if that's not possible, what else could we do?

7 And so, what else should this program be doing if the
8 government isn't going to be taking on a big funding role.
9 What else should we be doing to engage the private sector
10 and to look at other ways of doing what we're going to
11 accomplish through VII?

12 Now, what we have realized is, and what those who
13 really knew DSRC well know is that DSRC is the only
14 technology that we know of now that has the properties that
15 are able to do the safety applications that require very
16 fast transactions. So, the active safety applications,
17 where the vehicle brakes to avoid collision, that's one of
18 the advantages. It's also dedicated spectrums, and that's
19 very valuable.

20 Randell Iwasaki: Plus, it's reliable.

21 Valerie Briggs: Exactly. The protocols are built to
22 be very reliable, and so there are some significant
23 advantages to DSRC. Since it is an open standard, one of

1 the challenges is, and we want a non-proprietary system for
2 this, how does someone make money on a non-proprietary
3 system? And there is the Catch-22, how to get your private
4 investment in a non-proprietary system? They're not
5 compatible. So, those are the challenges that we are
6 grappling with.

7 Shelley Row: One thing I would add, Valerie just did
8 a good job articulating the changes. One thing I would add
9 is, originally, the program was focused, both on safety and
10 mobility. And you heard from the administrator yesterday,
11 the focus on safety. So, we have refocused the program to
12 be almost exclusively on safety and situational awareness.
13 That includes some of the weather data we can get off the
14 vehicles for the pro-DSRC based transactions. But, a lot
15 of the peer mobility work has been de-scoped.

16 Valerie Briggs: That is largely because we do realize
17 that there are other technologies out there that can do the
18 mobility applications, that DSRC doesn't have a monopoly on
19 them.

20 Robert Peter Denaro: DSRC is like travel information?

21 Valerie Briggs: Exactly, it provides information
22 about the infrastructure.

23 Scott Belcher: It's also important to realize that

1 DOT has not been making these changes in a vacuum. When
2 they're talking about new business models, they went out to
3 the industry to get feedback, when the talked about proof
4 of concept, and potentially changing that. And what
5 happens to the test bed? They went out to the industry for
6 feedback. And so, many of the folks here have had an
7 opportunity to continue to provide information as this is
8 evolving.

9 Dr. Kenneth Button: A statement and a question. My
10 statement is simply, taking out the mobility aspect from
11 the safety aspect, I think, is dumb, because you ask, how
12 do you actually pay for these things and get people to use
13 them? Complementary goods are sold together, and that is
14 absolutely dumb to separate them out. It really is. It's
15 simple economics.

16 My question is, though, can you just explain a little
17 bit how you do a cost benefit analysis on this?

18 Valerie Briggs: We have the Volpe Center doing cost
19 benefit analysis. It is, to date, a very classic federal
20 cost benefit analysis that looks at the total system cost
21 versus the total system.

22 Dr. Kenneth Button: The total system?

23 Valerie Briggs: We have a pretty good idea of what a

1 total system cost would be, because we have an architecture
2 and we have a system design. So that, okay, wait a second.
3 We have estimated what we think the end vehicle cost would
4 be, and we have estimated what infrastructure cost would
5 be, and we have some good idea - in fact, California has
6 done a lot of good research on the cost.

7 What we don't have a good concept of is the monetary
8 value of the benefits. That is why this has been very,
9 very difficult, because while we can classify the
10 monitoring value of some of the safety apps, it's very
11 difficult to classify the monitoring value of the mobility
12 applications of the things that we don't even know the
13 system will be used for yet. I mean, this is like the
14 internet. How do you do a cost benefit analysis for the
15 internet? So, this has been a very difficult exercise.

16 Dr. Kenneth Button: I'll ask a philosophical question
17 then, since cost benefit analysis is a partially colloquium
18 approach, and you can't do it on anything of size, how do
19 you do it on a system like this, theoretically? As an
20 economist, I ask that question.

21 Valerie Briggs: You probably have a better sense of
22 how to do it than I do.

23 Dr. Kenneth Button: You can't do it. That's my

1 point. It's impossible.

2 Valerie Briggs: This was originally done, you do cost
3 benefit analysis when the federal government is going to
4 make a major investment, or when it's making a requirement
5 on a state, because you want to know how much it's really
6 going to cost.

7 Dr. Kenneth Button: They do an assessment, not a cost
8 benefit analysis. A cost benefit analysis, in economic
9 terms, has a particular meaning. I hope the government is
10 not doing the cost benefit analysis.

11 Valerie Briggs: There are a lot of issues here, and
12 I'm going to move on. I don't know that I can answer your
13 questions.

14 Bryan Mistele: You say you have a very good idea of
15 the system vehicle costs?

16 Valerie Briggs: We have a better sense of the
17 infrastructure cost.

18 Bryan Mistele: For a nationwide deployment, what is
19 it?

20 Valerie Briggs: What we've done is, we have
21 extrapolated what we have done in the Detroit and
22 California tests. California has actually done some really
23 good analysis of what it cost them to install the test

1 materials. And of course, we can make an estimation that
2 the equipment costs are going to go down. And, we have to
3 assume, based upon assumptions.

4 And, we looked at what it would take to do the
5 backhaul communications, as well as the road
6 infrastructure, as well as the operational cost. We made
7 assumptions, which is what you have to do, based upon what
8 you think would be required for operation, as well as
9 replacement costs, as well as maintenance costs.

10 This was looking at a forty year term horizon. It did
11 include operating costs. And this was based upon the
12 system design that we've actually done in the early part of
13 the program. So, it's all assumptions based. We also do
14 have some vehicle cost, based on the fact that the auto
15 makers are working with us, and are installing the
16 equipment in the vehicles. And, we're making assumption.
17 We don't know how much the cost of the equipment will go
18 down or not.

19 Shelley Row: I would just add, this has been a sticky
20 wicket, to say the least, and the first go at it was
21 premised on that original concept of in the box, that
22 Valerie described, which was DSRC only, lots of
23 intersections on freeways, all that kind of thing. And so,

1 that was where some of the original numbers came from.

2 What we are doing now is going back to rethink it.

3 And, some of your comments can be most helpful, to say,

4 "Well, what if the model was a little different. What if

5 it was V to V only, and what does that mean. And what if

6 it was V to V, plus V to I, only at high crash

7 intersections? What would that look like?"

8 Valerie Briggs: We're now using it more as a decision

9 tool, as to whether we should go forward, and in research

10 terms. So, it's less, what is going to cost on a national

11 scale, to implement this by everyone who might be involved?

12 And, what do we think are the major benefits and monetary

13 value of those benefits from certain sets of applications

14 or approaches we can take? How do you compare the various

15 deployment decisions based upon some idea, or some other

16 cost?

17 Dr. Joseph Sussman: This gets to the question I asked

18 before on re-scoping questions. What I hear is, there are

19 two re-scopes, one broadening beyond DSRC, and the other

20 was the unrelenting focus on safety within the context of

21 VII. Is that the re-scoping we are hearing?

22 Valerie Briggs: There were a lot of re-scopes. Those

23 are two of the main ones. Certainly, the expanding beyond

1 DSRC, we don't want to abandon that issue because we still
2 think it is critical. And then, the safety also, I don't
3 think we're abandoning mobility, but our administrator
4 wants us to be very focused on safety.

5 And the point that you brought up was, originally, why
6 it was all done together? With the concept that you can
7 piggyback, you can get the value out of mobility benefits.
8 So, that is now a challenge, on how do you deploy this?

9 Robert Peter Denaro: I have one question, and
10 Shelley, this may be in the white paper, also, where we
11 consider this near-term. And, I'm struggling a little bit
12 with that, because it seems to me that, indeed, while
13 you've got the infrastructure deployment necessity, and
14 whether it's DSRC, or whether it's striking the right
15 agreement with private companies, and so forth, that still
16 takes time.

17 And the V-to-V, it seems to me, that first of all,
18 getting equipment into OEM vehicles is not a quick process.
19 And secondly, you need a reasonable population of vehicles
20 before they start showing some benefit. And to me, those
21 seem to add up to be a more medium term, as opposed to a
22 year term. Can you help me with that a little bit?

23 Valerie Briggs: What is your exact question?

1 Robert Peter Denaro: Well the question is, seeing
2 this referred to as a near-term opportunity, one to three
3 years, to me, seems to be a lot longer.

4 Valerie Briggs: I don't think this is a near-term
5 opportunity.

6 Shelley Row: The Safe Trip-21 sliver is intended to be
7 near term.

8 Valerie Briggs: That is the mobility application.
9 It's not using the DSRC technology.

10 Joseph Averkamp: You're referring to Page Three of
11 the draft?

12 Valerie Briggs: I'm going to have to speed some of
13 this up. This is a much longer term program, and it's
14 largely going to depend on whether the automobile industry
15 is comfortable with this, and whether they're willing to
16 implement it.

17 Let's go on to the next slide. One of the things
18 we're looking at for the program is, how much vehicle
19 infrastructure do you really need? Can we do this at a
20 minimum level, other than the infrastructure? And that
21 fundamentally changes the architecture, and that
22 fundamentally changes how we do things. And security
23 becomes much more difficult then, and those issues change.

1 But, we think that is probably a more realistic deployment
2 scenario than looking at thousands of state and local
3 agencies out there, expecting them to implement this.

4 So, the next two slides are broken out in terms of how
5 the program has been re-scoped. We've worked a lot with
6 the administrator in doing this, but the vision here is to
7 do a lot more scanning of what technology is available now,
8 and what's on the horizon, to make sure we're not ignoring
9 some things that are coming out that could make a big
10 difference.

11 And also, looking at what could we do to accelerate
12 the deployment? Is there, for instance, a strategy to
13 retrofit the vehicles, or to get the aftermarket industry
14 involved in putting different technology in their devices,
15 that can then be put into a vehicle that can be used for
16 safety? For instance, can you put a DSRC chip in a GPS
17 unit?

18 Then with the leading architecture and standard for
19 DSRC, there is still some standards work to be done. It
20 takes a long time to develop standards, and we're well down
21 that path. But, it will be 2009 before we can complete all
22 of this.

23 We're also working with the industry on developing

1 certifications processes, to certify that the technology
2 meets the FCC standards for DSRC, and we would not do that
3 as the government. That would be an industry activity.
4 But, we're working with industry to develop a test method
5 and to help them establish a process.

6 We're still very interested in safety applications.
7 We have worked with the auto industry to help them develop
8 vehicle-to-vehicle safety applications, as well as others
9 that could be used with the DSRC system. And, that
10 involves a lot of Con Ops development, as well as doing
11 field operational tests. Of course, those are huge tests.

12 I think that's most of what's on this slide. Any
13 questions here, or shall I go on? I don't want to use up
14 all of my colleagues' time. I will take questions.

15 Robert Peter Denaro: Why don't you go on, and we'll
16 come back with questions?

17 Valerie Briggs: Okay. And then, one of the things
18 our administrator cares the most about is that we establish
19 test beds that are based on open platforms. And my
20 understanding of an open platform is that it rises above an
21 architecture. It looking at what are the interfaces to
22 enable various technologies to be used within a system?

23 And so, we're looking at how you establish an open

1 platform that can be used for VII, and then, how do you
2 establish test beds where industry, or state and local
3 governments, or whoever, can come in and test their
4 concepts? And, how do we help promote what is going on in
5 the industry, and working with industry to develop some
6 additional focus on this subject through a series of test
7 beds?

8 Then, the next two categories are going to be looking
9 at the non-technical issues. We're looking at re-branding
10 the program. Clearly, there have been some big changes.
11 No one ever liked the term, VII, and so, what should we
12 rename the program? What is the program? How do we talk
13 about the program? We're actually going to hire a
14 professional firm to do that work with us on that. That is
15 something we, as engineers, aren't good at.

16 Where we did develop a website, then we're greatly
17 going to expand it to be a knowledge management tool, where
18 we do look at other research that is going on around the
19 world in this subject. We will provide some resources for
20 whoever is interested in the subject.

21 Also, looking at the institutional framework, what
22 should be the government's role in all of this, and how do
23 we help make this happen? And then, the related policy

1 issues and legal issues.

2 And then, as you said, we really are turning our cost
3 benefit analysis into more of a return on investment
4 deployment decision tool, to help us look at what research
5 should be done.

6 And then, of course, our partners care a lot about
7 mobility and environment, and we don't want to abandon
8 those. So, one of the big things we're going to be looking
9 at is, what can we piggyback on to? If we're doing a safety
10 system, what can we piggyback on? What are the other
11 benefits related to mobility and the environment?

12 Shelley Row: One thing I would quickly mention here,
13 too. Kay Hartman is here. She's working with Valerie and
14 Mike on an applications workshop, and a couple of us talked
15 about that last night, the premise being, not necessarily
16 VII, but if you got in the presence of all this data that
17 we know is coming, what do you do with it and how do you
18 use it? So, that is something we're looking to do, later
19 in the fall.

20 Valerie Briggs: And that would not just be DSRC data.
21 The I-95 Corridor Coalition is looking at this. Lucky me,
22 I got to say, I don't know what my budget is. We've just
23 gotten to this level of re-scoping. We are determining

1 what all of this means, and what it costs. And, we don't
2 have a defined budget.

3 In the past, the VII budget has been about twenty one
4 million. I don't know what the new budget will be. That
5 is our starting point. But, we have to look at these
6 things, to see how much we're going to do in each of these
7 areas.

8 Shelley Row: When we estimated early on, we estimated
9 it was about sixteen million for VII, for the next fiscal
10 year, but that will likely change. Also, we're looking at
11 CICAS, and that one is changing, as well, in light of all
12 the changes to the program.

13 Valerie Briggs: If there are no questions, let's go
14 to CICAS.

15 Robert Peter Denaro: I just wanted to poll the
16 congregation on the advanced state of the art, and likely
17 to be deployed, and government roles.

18 Joseph Averkamp: I guess the one observation, and I
19 haven't looked at VII a lot, is one of the challenges to
20 the deployment I see with, generally, a nationwide wireless
21 network is, how is it going to be best deployed and managed
22 by a central authority, which is somewhat counter to the
23 traditional way DOT does business, from a federal aid

1 perspective.

2 So, that's going to be a barrier to deployment. The
3 most efficient way to run a network is the way Verizon does
4 it and the way Spring does it. And if we're going to
5 federalize it, where it's going to be sent off to all the
6 states, we'll have to figure out a way so that we don't
7 have-

8 And that goes from, not just management of the
9 network, but spectrum management. There's probably a role
10 for somebody to be a spectrum manager, to make sure that -
11 you always have issues with competing towers. I mean,
12 carriers deal with that all the time. So, that's among the
13 issues incorporated in the technology.

14 Scott Belcher: For me, a big hurdle is an ability or
15 willingness to commit, because technology is evolving so
16 quickly, and things are happening so quickly, and I've only
17 been around for nine months, but I've been watching you
18 guys try to keep up and make sure that you don't lose sight
19 of where technology is, and the advances that are happening.
20 But if you don't, at some point, commit to something, then
21 you will just spend all of your time chasing after the next
22 technological advance.

23 Valerie Briggs: And, the auto industry is very

1 concerned with that, too. They're saying, if we have to
2 put something in our vehicle, we have to know what it is.
3 We can't put an open platform in our vehicle. What does
4 that mean to us? So, we need to define things at a level
5 that are practical to them.

6 Randell Iwasaki: I think the good news is, the FCC
7 sets aside 75 megahertz of spectrum for transportation
8 purposes, so that's kind of the focal point of
9 communications. The Safe Trip-21 kind of goes the next step,
10 and that is to test, are there aftermarket solutions?
11 Because VII, when we first started, the communication
12 technologies were imbedded in the car.

13 With Safe Trip-21, we are talking about communications
14 that are different. There are PDAs and cell phones, and
15 things like that. So, what are the next generation of
16 communication devices that will allow us to do some things
17 we're trying to do with VII? We don't know. That's one of
18 the tests.

19 Robert Peter Denaro: Randy, from the California
20 perspective, I guess with transportation, do you see the
21 likelihood of deployment of something like this?

22 Randell Iwasaki: We have always, because we are one
23 of the - we finally made the test bed. We started

1 installing our DSRC radios for the World Congress, and we
2 knew we weren't going to put those everywhere in California
3 by ourselves. We didn't have the money, and it just
4 doesn't compete with the overlay and interchange.

5 So, we tried to go and be open-minded about it. Okay,
6 if this truly is a technology we want to use, then how do
7 we do it where there's an incentive for the private sector
8 to come forward? And, that's why we have all these
9 partnerships with others. And originally, in order to be
10 in the test bed, you had to use DSRC, you had to use
11 certain software, everything had to be consistent.

12 And I think the step forward, which in Scott's mind
13 may be a step back, is we're going out, saying, "Okay, what
14 else is out there?" I think that's what really keeps us in
15 the game, is that there are other options. At the end of
16 the day, we're going to have safety benefits, and
17 hopefully, the mobility, because, that is the piece,
18 itself.

19 Bryan Mistele: I would add, as originally envisioned
20 it, vehicle-to-infrastructure, I still remain very
21 skeptical if we're going to see a nationwide deployment of
22 any infrastructure, given the cost that won't be borne by
23 the government or the private sector, then you'll have to

1 go to vehicle-to-vehicle.

2 My concern there is that the private sector is already
3 doing a lot of the efforts and a lot of investment today.
4 So as currently envisioned, and again, I'm not an expert at
5 all in VII, but we all wonder if it will be deployed?

6 Randell Iwasaki: When you get to the next topic, that
7 is really when you talk about intersection of collision
8 avoidance. You have to have something that is not going to
9 drop on you. Communication can drop. The cell phone
10 signal is weak in that area. At least from a DOT
11 perspective, you're betting a lot of money on the fact that
12 whatever we're going to do, it has to work 100% of the
13 time. If it doesn't, you're in deep trouble.

14 Valerie Briggs: If this research spurs the private
15 sector to provide the technologies that would allow the
16 automakers to build vehicles that didn't crash, to prevent
17 an accident, then it has accomplished its purpose. It
18 doesn't have to be done in a design that the federal
19 government comes up with.

20 Randell Iwasaki: The whole premise was, cars refusing
21 to crash, cars refusing to run off the road.

22 Valerie Briggs: If some company comes up with the way
23 to do that, then we will have accomplished our goal. And,

1 if it's affordable to the general public-

2 Robert Peter Denaro: You can retire?

3 Valerie Briggs: Right.

4 Joseph Averkamp: I see where Bryan's coming from,
5 from the perspective of the intermingling of safety and
6 mobility. And I know, to Ken's point, that mobility is
7 what sells. And actually, that is why so much of the
8 private sector is peeling off of those apps and making
9 money at it.

10 Now, people want to talk about downloading movies and
11 stuff, but they've been doing it for about three years. As
12 far as probe data, their study is done around probe data.
13 So, all of the valuable assets have been peeled off. Also,
14 when you start to talk about the need for commercial to
15 interplay with safety, when you look at what the FCC did
16 with the 700 megahertz spectrum and the D-Block, which
17 they're trying to raise 1.3 billion for, they only got one
18 bid for 470 million. When it didn't meet the reserve
19 price, they took it back.

20 And the reason why people were reluctant to bid on
21 that is that, when you have the requirements for public
22 delivery that are intermingled with your commercial
23 requirements, it makes the spectrum less valuable. People

1 are not sure of what the requirements are going to be.

2 If you talk to people who were looking to bid on the
3 spectrum, it's because many of the state public
4 communications officials wanted things like, ruthless pre-
5 emption, that is, if there's a hurricane in Florida, I want
6 to kick every consumer off my network and make it just
7 available to first responders.

8 The challenge with that is that, that's exactly the
9 time that I, as a consumer, want to use my phone. So
10 consequently, I'm not going to subscribe to that service.
11 And so, I just think we have to be a little bit careful
12 about overestimating the value of the mobility
13 applications, especially if they're intermingled with
14 safety.

15 Bryan Mistele: And to your point, a nationwide
16 wireless network, regardless of whether it's Wi-Max or Wi-
17 Fi, or whatever, is very expensive. We have a history of
18 those. Your other point, obviously, as with On-Star and
19 investing, that service exists for safety and security.
20 That is how they make their money. So, clearly, safety
21 sells.

22 And so, I guess from an environment-scanning point of
23 view, we do want to look at what the car companies are

1 doing. (Inaudible)

2 Shelley Row: One of the things I would share with you
3 is, and you are welcome to comment as well, we do work with
4 the automotive industry quite a lot in this program, and
5 they come to us and tell us where they need our help.

6 So, for example, even in the vehicle-to-vehicle, where
7 they are perfectly capable of doing the research and the
8 applications for that, what they've asked us to do is the
9 security work in the middle because it's so critical, you
10 can't have a bogus car communicating with a real car. And
11 so, they've asked us to step in the middle of that.

12 And so, we're trying to work with them to do some of
13 the security work, to study some of the scalability for the
14 vehicles to communicate with vehicles. And, if you think
15 of the number of vehicles in the world, it's an enormous
16 load of information.

17 So, is it scalable and reliable? Would it be at that
18 scale, and some of those issues? And so, that is where we
19 are trying to, in the white space we talked about, that is
20 where we're trying to work in that white space, to
21 facilitate the automotive industry.

22 Scott Belcher: And, you also help them bridge the
23 anti-trust gap, as well. That's an important function.

1 Robert Peter Denaro: One thing I struggle with a
2 little bit, in understanding this, is the integration of
3 this with the previous discussion on the IVBSS. What is
4 the end stage that is going to make sense, in terms of
5 autonomous systems, etcetera, on the vehicles, versus this?

6 So at an intersection, with the new scanning lasers,
7 you can detect a vehicle coming and it's extremely reliable
8 and so forth. Do you detect curve warning, if that's in
9 the vehicle, or is that an infrastructure thing? So, what
10 is the likely intersection of those technologies which
11 makes both of them work better, and at the right price
12 point and so forth?

13 Robert Peter Denaro: Now, just to check on time,
14 CICAS is the next one, is that right?

15 Valerie Briggs: We can go real fast through CICAS.

16 Robert Peter Denaro: That's what you think. You
17 thought you were going to go fast through this one. Just
18 for everybody, we had planned a break at 10:15, but I would
19 suggest we go through CICAS, and everyone will be motivated
20 to move quickly. Then we will take a break after that one.

21 **Cooperative Intersection Collision Avoidance Systems (CICAS)**

22 Valerie Briggs: Like I said, Mike Schagrin is really
23 the manager of CICAS. With VII, I know it, and with CICAS,

1 I'm going to do my best.

2 CICAS is really three different programs. One is the
3 Intersection Violation Warning Program, where you get a
4 warning light in an intersection, for the most part, the
5 signalized intersection.

6 Then, the next one is actually helping you to do a
7 left turn in an intersection, because of course, there are
8 a lot of accidents in left turn movements.

9 And, the other one is helping you to judge a gap at a
10 stop signed intersection. There are a lot of accidents at,
11 particularly, rural intersections, where people misjudge
12 gaps.

13 And so, it's really three programs. We're working
14 with different states and universities. This has largely
15 been the University of Virginia, this has largely been
16 California, and this has largely been Minnesota. I believe
17 that's true.

18 And, the CICAS Violation Program has just completed
19 Phase I. Phase I was developing the concepts and doing a
20 lot of human factors research on the driver vehicle
21 interface, and then actually conducting and developing
22 prototypes, and conducting major test track testing of
23 those prototypes.

1 They just completed that in Virginia and did get very
2 good results from this. I'm told that it went extremely
3 well. And, they actually did use real drivers, not
4 engineers. And so, they recruited average people out
5 there, and used them at the Virginia Tech Test Track.

6 This is a program that NHTSA is very involved in, and
7 is actually leading for us. We are very excited about it.
8 And, the next major step in this would be a major field
9 operational test. And like I said, as you know, field
10 operational tests are really expensive, because it's
11 implemented in the field. We don't feel that we have the
12 money at this time to do a major field operational test,
13 and so we have put the brakes on this program at this time.
14 But we may be picking it up and have some of the testing
15 done through VII, in the future.

16 Robert Peter Denaro: I'm sorry, I don't completely
17 understand what "violation" means?

18 Valerie Briggs: Violation means it's just, if you're
19 about to run a signalized intersection, that you'll get a
20 warning in your vehicle saying "stop."

21 Robert Peter Denaro: Traffic light, but not stop
22 sign?

23 Valerie Briggs: I believe it's just traffic signals.

1 Yes, Gregg is confirming, this is just traffic signals.

2 So, what happens is you have is, you have the intersection.

3 There's a timing on the signal, itself, that sends your car

4 a message that says, you're about to violate.

5 Robert Peter Denaro: This is not like a camera in the
6 car, sensing if this is a signal?

7 Valerie Briggs: It's from the intersection, yes.

8 It's DSRC based.

9 Shelley Row: That's the other reason we put the field
10 test on hold, with all of the re-scoping and refiguring, to
11 see what makes sense. It's not clear, when you're talking
12 on the order of fifteen million dollars for the field test
13 component, which it is. So, we wanted to let this shake
14 out a little bit more before we make the investment.

15 Valerie Briggs: In order for this to work, you can
16 put it on a major portion of the signalized intersections
17 in the U.S. So, it would be a huge deployment cost.

18 Robert Peter Denaro: Well, maybe. But, when you put
19 it on one, you get the benefit there.

20 Valerie Briggs: You do. This doesn't necessarily
21 have to be universal. In fact, in the VII calculations,
22 most of the vast majority of the ROCs were signalized
23 intersections.

1 Robert Peter Denaro: My point was, if you did add
2 that to all of the signalized intersections in the U.S.
3 that had the most accidents, and you started working your
4 way down the list, after ten, you're making a substantial
5 contribution.

6 Valerie Briggs: That's very true.

7 Dr. Joseph Sussman: In the written material, you
8 characterize CICAS as research within the re-scope of VII.

9 Valerie Briggs: They started out as separate
10 programs. We're doing everything we can to merge them.
11 They are, of course, based on the same technology, and
12 there has been interaction. It's a lot of the same people
13 from the automotive companies, but it is two different
14 groups. It's more of the safety engineers, whereas with
15 VII, you work with a group called the VII Consortium, which
16 is more the policy level people. And so, we are merging.

17 Dr. Joseph Sussman: We non-fed mere mortals sometimes
18 have trouble following all these acronyms. You talk about
19 VII, you talk about Safe Trip-21, you talk about CICAS.

20 Valerie Briggs: And up here, I had to look up what
21 DVI was, and what DII was, myself. And that is one reason
22 why, and Shelley has been a big proponent of this, is that
23 we're all engineers, well most of us are engineers. And we

1 come up with these terms that make sense to us, but they
2 may not make sense to everyone, and we're trying to become
3 much more friendly to how we talk about our programs.

4 Dr. Joseph Sussman: I'm less worried about particular
5 acronyms like VII than I am about names of programs which
6 turn out to be largely the same, with different names.

7 Valerie Briggs: Well, we started out as in-house
8 research programs, and while that's fine for us in house,
9 it doesn't make sense when you're talking to the outside
10 world, which is why we're trying to talk about them in the
11 same program.

12 Dr. Kenneth Button: Besides reporting back to
13 reporting back to my friends in Virginia that the engineers
14 are not real drivers, which I'm sure they're going to love
15 to know, I have a couple of questions. The first one is
16 actually on testing. Is this testing also about human
17 reaction to this information?

18 Valerie Briggs: It is.

19 Dr. Kenneth Button: My tendency, if I hear the fact
20 that the light is going to change to red, is to put my foot
21 down, not slow down.

22 My second question is, do we look at why people have
23 some of these problems? For example, my difficulty is

1 having taken someone to Baltimore last weekend, I kept
2 going through stop signs. And the reason was simply, they
3 were just not painted on the road properly. The sign on
4 the pole had fallen off, or whatever. Now one reason that
5 happens is the local government doesn't have the resources
6 to maintain one of the most primitive forms of information.

7 Now, if you're going to suggest putting in these
8 really rather more expensive forms of information, I'm just
9 wondering how you're going to get full implementation,
10 given the fact that they can't maintain what they've got?

11 Valerie Briggs: And, that is an ongoing problem with
12 all of ITS. We can study this technology, but whether or
13 not it will be implemented in the form we envisioned it is
14 something that we have a real hard time with having to get
15 control over.

16 And, we are doing quite a lot of human factors
17 research in both of these areas. In fact, this one, the
18 Stop Sign Assist Program, has a pretty active human factors
19 research, looking at how the driver reacts to information
20 on the roadway. So, that is the message.

21 Dr. Kenneth Button: They normally haven't got
22 anything, because they're missing something in practice.

23 Valerie Briggs: That is a different funding program.

1 Alfred Foxx: What you're saying is in real world
2 reality, the funding for maintaining the basic
3 infrastructure is kind of scarce.

4 Valerie Briggs: I know, I know.

5 Alfred Foxx: So, with all of the technology that
6 you're presenting, you say, well, how does that really make
7 streets even safer, when just the basic thing is not there?

8 Randell Iwasaki: I think that's a great question.
9 This has to do with signalized intersections.

10 Alfred Foxx: I understand signalized intersections,
11 but there are certain cues on signalized intersections that
12 most of the human persons that are driving key on, like the
13 stop bar. I know, in Baltimore, we have stop bars and
14 crosswalks.

15 (Crosstalk)

16 Randell Iwasaki: The controller, itself, can be VII
17 rated. There's not a lot of maintenance, per se, on
18 controllers, and so you've got your normal infrastructure,
19 with just little add-ons. You have a little sticker that
20 says VII ready on your controller. I'm not sure what you
21 do with a stop bar, or the lack of a stop sign.

22 One of the proof of concepts that we're looking at on
23 VII, is on vehicle signage. If your car is warning you,

1 there should be a stop sign there.

2 Alfred Foxx: Even with that, there are some
3 environmental things you have to be worried about,
4 especially in an urban environment where you have trees
5 growing, and things that would interfere with the signals.

6 Valerie Briggs: That's a good point. This was line
7 of sight based testing, and that is one of the big issues.
8 Does DSRC work over the horizon, or urban canyons?

9 Okay, Signalized Left Turn Assist, this is the
10 California program we're working on, to look at what we can
11 do to improve left turn movement and reduce left turn
12 related crashes. There has been, I believe this was in the
13 early stages, there's been a concept of operations
14 developed, and there is some research looking at that
15 concept of operations and how it works with the signalized
16 intersections. If you have more questions, I'm going to
17 refer you to Gregg Davis in the back. Again, this is
18 communication from the traffic signal.

19 Joseph Averkamp: I don't want to get too deep into
20 the concept of operations, but how does it detect the
21 approaching vehicle? Is this radar?

22 Valerie Briggs: This is DSRC-based, also.

23 Joseph Averkamp: So, it requires the oncoming vehicle

1 be equipped?

2 Valerie Briggs: The assumption in this program is
3 that VII was going to equip all the vehicles. That is why
4 this program is one that we're rolling out.

5 Joseph Averkamp: So, the information on that is sent
6 to the vehicle?

7 Valerie Briggs: Yes.

8 Greg Davis: Actually, there was room for a sensor in
9 the roadway. Adding to what Bob said, the second program
10 there, the Left Turn Assist and Stop Sign Assist, are
11 originally programs designed to give drivers supplemental
12 information that would help them to have a proper cap,
13 whether at a signalized intersection, or a rural
14 intersection, which rural Minnesota is doing in the stop
15 sign assist. Under those two conditions, they're using a
16 combination of lasers and radars to detect the presence of
17 road signs.

18 Shelley Row: With stop sign assist, part of this
19 program is intended to be an early way of deploying a
20 technology to help with that particular problem. So, it
21 was originally conceived as a pre-DSRC, pre-VII
22 application.

23 Dr. Adrian Lund: I'm having difficulty imagining how

1 the left turn assist works. What is it doing? I'm trying
2 to think of when you need that assist.

3 Randell Iwasaki: If the car is coming too fast and
4 you misjudge the gap, and you go ahead and make the left
5 turn, and they hit you. This system will warn you, "Don't
6 make the left turn, because the oncoming car is coming too
7 fast." You're not able to judge that. That is one of the
8 accidents.

9 Dr. Adrian Lund: But, I can predict how this is going
10 to be set. This is going to be set at a very cautious
11 level. It's going to be like curve speed warnings out
12 there on yellow signs, which people regularly ignore
13 because they're set very, very low. This is going to be
14 giving information that is going to tell people, "Don't
15 turn, this car is coming too fast."

16 And those people are going to be sitting there, and
17 they're going to say, "Well, this thing is really
18 conservative." And then, it becomes information that they
19 don't use. Because I can't imagine you sitting at the true
20 danger point, that is if you floor it, you can't make it.

21 I'm just trying to figure out, if I'm a driver, when
22 does it help me?

23 Greg Davis: The last scenario with a rural signalized

1 assist, and also these are the accidents that the states
2 have observed that at these particular stop-controlled
3 intersections, the accidents that are involved are
4 typically - 70% are either A, B, or K classifications, so
5 they're very severe hits, because of high speeds on the
6 major arterials. So, this system is assisting drivers
7 trying to make a left turn, through a divided highway.

8 Now, what happens when we look at the human factor
9 studies, is we get a bunch of data collected that shows the
10 accidents were violations of all the human factors. They
11 were daytime accidents, clear weather, clear sight
12 distance, there was no driver distraction involved. They
13 were just poor judgments, and the driver may not have been
14 paying attention to the road, and they pull out with a gap
15 of less than two seconds, or even less than that, and they
16 are hit.

17 So, the intent of this infrastructure based device is
18 to warn them and to give them a little heads up that
19 there's traffic approaching from the left, from the right,
20 or across the road, and you should not go.

21 Dr. Kenneth Button: Let me just ask, who are the
22 people doing this work? Are they sociologists and
23 psychologists?

1 Greg Davis: They are a combination of engineers and
2 psychologists at the University of Minnesota.

3 Dr. Kenneth Button: I mean, it's a human first, and
4 engineering second. Human factors may dominate everything.
5 (Inaudible)

6 Shelley Row: And, that is the Stop Sign Assist
7 Project, isn't it Greg?

8 Greg Davis: Yes.

9 Shelley Row: The signalized Left Turn Assist, that's
10 in the very early stages, and we just had a review on that
11 just recently. And the original technology, while it's
12 valid, we think there are other technologies that might be
13 equally or better suited to the problem.

14 So we're actually going to go back to rethink a little
15 bit, to make sure we're really looking at optimal choices.
16 It's a very real problem. It is just we are looking at the
17 right technology options?

18 Dr. Adrian Lund: I recognize the problem. I just
19 can't figure out how this actually works.

20 Greg Davis: With many of those crashes, obviously, if
21 we see the vehicle coming to us, we're not going to make
22 the left turn. But in many cases, we don't see the vehicle
23 because of the queue of vehicles in opposing lanes making

1 left turns or whatever, we don't see them, and we go
2 anyway. Those are the kinds of situations where a
3 supplemental warning can add value.

4 And even if you don't believe, you know, you're making
5 a turn and you realize the thing goes off early, and so
6 forth. If you can't see and you're taking a chance, you
7 are going to pay attention.

8 Joseph Averkamp: So, I think the biggest challenge to
9 deployment here, Bob, is the number of DSRC units deployed
10 in the vehicle?

11 Shelley Row: That's for the first one. The second,
12 too, is it's an option they don't require in the vehicle.

13 Robert Peter Denaro: I know of work going on in
14 Europe right now, for example, where they're using a lot of
15 in-vehicle cameras and that sort of thing, to detect stop
16 signs and signals, and so on.

17 Valerie Briggs: And, I also believe these are not the
18 technologies that have to be connected to the vehicle,
19 necessarily. It could be aftermarket.

20 Robert Peter Denaro: Good point.

21 Shelley Row: I'm not sure we're completely clear on
22 the stop sign one. As Greg said, if there is a divided
23 highway kind of a scenario where you're misjudging the gap,

1 it's a driver infrastructure interface. So that's not an
2 in vehicle warning. So, the roadway knows you are there,
3 because of the combination of laser and radar, and it is
4 able to tell you via a sign on the road. That's why I-to-
5 I, the driver infrastructure interface is a sign. And
6 that's why it was considered to be a very early application
7 of technology that would predate a VII application.

8 Dr. Kenneth Button: So, this would replace the
9 physical sign, which Baltimore can't afford to provide?

10 Shelley Row: That would be it.

11 (Crosstalk)

12 Robert Peter Denaro: I'm sorry, would you say that
13 again?

14 Greg Davis: Part of the stop sign assist and the
15 signalized left turn assist, these are simply advisory
16 signs, so they're only telling a driver when it's not safe
17 to go. We do not give any information for the driver to go
18 ahead.

19 Dr. Adrian Lund: So, where is that displayed?

20 Greg Davis: The display, which one, for the stop sign
21 or the signal?

22 Dr. Adrian Lund: It sounded like you said they were
23 the same, but I need both of them.

1 Greg Davis: For the stop sign, there are two signs.
2 One is located in the median, and the other is on the far
3 side of the intersection. For the signalized intersection,
4 the infrastructure interface is mounted on the mast.

5 Dr. Adrian Lund: And, that gives speed back to the
6 person?

7 Greg Davis: Yes.

8 Dr. Adrian Lund: So, this is another place the person
9 should look when they looking to see if traffic is coming?

10 Greg Davis: That's correct.

11 Tomiji Sugimoto: There are many options.

12 Dr. Adrian Lund: It could be in the car, but this is
13 just sign enhancement.

14 Valerie Briggs: Right now, yes.

15 Dr. Adrian Lund: This is just sign enhancement.

16 Greg Davis: There are two things going on here. One
17 is the hidden communications the driver does not really
18 see, and the other component is the actual interface, which
19 can be based in the infrastructure, on the vehicle, or
20 potentially on the road, or both. We just need to do
21 further research to find out which is more effective.

22 Randell Iwasaki: I wanted to say, we built one at the
23 2005 World Congress in San Francisco. We have the

1 technology deployed.

2 Valerie Briggs: Any other questions?

3 Robert Peter Denaro: Any other questions on the
4 likely to be advanced state of the art, likely to be
5 deployed federal role? Okay, good.

6 Valerie Briggs: Okay.

7 Robert Peter Denaro: Valerie, thank you. Good job.
8 Okay, I think I would propose a break. So, what did we
9 plan? We planned it for fifteen minutes, so let's be back
10 around ten past.

11 (Recess)

12 **Clarus**

13 Robert Peter Denaro: Alright, I believe we're going
14 to talk about the weather next. Shelley, did you want to
15 say anything?

16 Shelley Row: This is Paul Pisano. Paul is in the
17 Operations Program. Linda Keefer is the JPO staff person
18 manages the Road/Weather part of the program, but Paul is
19 working on it every day. It's his full time job with
20 Federal Highway. He's been managing this program for quite
21 a number of years, and does an excellent job. He will be
22 talking to you about Clarus.

23 Now, just so you know, the legislation requires a

1 weather program and, in fact, specifies a certain amount of
2 money in the budget to be set aside for a Road Weather
3 Program. A part of that program is the Clarus Initiative.
4 So, it is not all the road/weather program, but it is the
5 major research initiative that is a part of the program.

6 Paul Pisano: Thank you. Again, for those of you not
7 familiar with Clarus, first of all, it is not an acronym.
8 It's the Latin word for clear. We did try to stay away
9 from the acronym side of things.

10 But, the whole idea here with Clarus is that, number
11 one, there is a difference between what happens up here and
12 what happens on the pavement when it comes to weather. We
13 know that when snows, and the snow doesn't stick to the
14 road, that we need to know what's happening on the roadway,
15 itself, when it comes to weather.

16 And the other position that we have is that if you had
17 more timely, accurate and relevant information about what
18 is happening, and what is going to happen with the forecast
19 side of weather, you, whether you are a traffic manager, or
20 a maintenance manager, or a traveler, or a truck driver, or
21 whomever, could make a better decision.

22 So, we're all about information and providing more
23 timely, accurate and relevant information about weather and

1 road conditions because of the weather. So, we start with
2 that, and recognize that we know that if you have better
3 road/weather information, you can make better decisions.

4 Safety ETs have been doing this for years when it
5 comes to winter maintenance, and have made huge investments
6 in sensor systems, and there are now about 2,500 sensors
7 along the sides of the road that are collecting data. The
8 problem was that data was not being quality checked, the
9 data was not going anywhere except, maybe, to the state, or
10 to the state's private sector vendor, and we were losing a
11 huge asset.

12 So, Clarus is all about assimilating all of these
13 observations, quality checking them, and then disseminating
14 them out to the community, both public and private sector,
15 to use these improved observations and turn them into
16 better road/weather information products. So, that is what
17 Clarus is all about.

18 So, what we've been doing over the past couple of
19 years is designing and developing this database management
20 system, which we did. And that system is run now by one of
21 our contractors. Now, we are at the point where we said,
22 "Okay, we've got the system developed. Let's show what we
23 can do with these observations through a regional

1 demonstration." The regional demonstration is in three
2 phases.

3 The first phase, which was completed in January of
4 this year, was to work with teams of states to say, "If you
5 had Clarus information, how would you do your job better?
6 What type of products and services would you want, to
7 better manage the system?"

8 We had three teams come up with their concepts of
9 operations, of what they would want to have in house, as
10 group information services, to better manage the system
11 because of the weather.

12 And out of that came some common themes of better
13 traffic operations, a better sense of what is happening on
14 the roadway, better winter maintenance, better traveler
15 information, and more infrastructure-based systems like a
16 better weight restriction system. So I know I'm not
17 letting my trucks drive down roads where the pavement is
18 going to be damaged because the subsurface layers are going
19 through freeze/thaw cycles. So those are the types of
20 concepts they developed.

21 The second phase is with the theme done in parallel,
22 which is to get as many states connected to the system as
23 possible. We started this fiscal year with six states, and

1 we added twelve new states. And, I'm going to go ahead and
2 tack on one slide here, that's not in the package, of the
3 current status of the system. You can see all the states
4 in green are those that are connected to the system, who
5 are providing their road/weather observations into the
6 database management system, and we're working with others
7 to get connected. So, our second phase of the regional
8 demonstration has been to get these other states connected.

9 You also see, that not only are we looking at just the
10 U.S., but we're working closely with Canada, who is
11 developing a similar system called, Road Weather
12 Information Network. And, we're bringing data from British
13 Columbia, the Yukon, and Alberta, as well.

14 We're also working with the local agencies. Right
15 now, we've got the city of Indianapolis connected, and
16 we're working with some other cities and counties, to bring
17 their data in, as well. The idea is, the more data you get
18 in, the better our observations are going to be, and the
19 better your ultimate product will be.

20 The third phase is where we are right now, to actually
21 build, deploy and evaluate the services that are captured
22 up in these Phase Con Ops. So, we took the Con Ops from
23 the states, who said, "This is what we would like." We

1 turned it into an RFP, which went out on the street to the
2 private sector. It was then required to partner with
3 multiple states to then develop those services, and we will
4 now go through a two year process of developing those
5 services, then testing and evaluating.

6 The RFP closes today, so I have nothing about how many
7 proposals we're received yet or anything like that. I
8 can't say anything more about it than that, except that we
9 are shooting to award by the end of the fiscal year. We
10 expect to get about twelve months of developing these
11 services, and then about twelve months of testing and
12 evaluation.

13 Joseph Averkamp: I'm trying to get a feel for the
14 numbers, like, how many stations are you deploying? Are
15 these, like, weather?

16 Paul Pisano: These are stations that already existed.
17 These are state investments in road/weather sensor
18 stations. There are about 2,500 out there today, and it
19 varies from state to state. Some states, like Minnesota
20 and Ohio, are very rich in their deployments. Other states
21 have very few. So, there is no uniformity. It's all about
22 what the states have decided to invest.

23 Joseph Averkamp: And, what we're doing here is not

1 investing and deploying additional stations? We're just
2 got incoming data from the ones that exist?

3 Paul Pisano: We're taking advantage of the existing
4 infrastructure, and making the most of those investments,
5 and just bringing the data into a common environment,
6 assimilating it, and quality checking it, which tended not
7 to be done within the state systems, to make sure we've got
8 good data, and then turning that out to whomever wants it.

9 It's available back to the states, so the states can
10 use the system, just to monitor the health of their
11 network, and see, "Am I getting the good data that I think
12 I'm getting?" and also, to the private sector. For
13 example, Barent Services is one of our customers. They
14 take the data off of Clarus, they feed it through their XM
15 services, so now, if you subscribe to the XM weather
16 service, there is some Clarus data in there.

17 Obligated this year was nine hundred thousand, a much
18 more committed big dollar figure being the base for the
19 regional demonstration, and we expect to obligate much more
20 by the end of the fiscal year.

21 Shelley Row: What's the big chunk of money you're
22 expected to obligate?

23 Paul Pisano: We expect to obligate, the total this

1 year for Clarus is about six million. And as I said, the
2 majority of that is part of the regional demonstration.
3 So, we're expecting another four and a half, easily, that
4 is committed, but not yet obligated, plus the other nine,
5 so that's five and a half that has either been committed,
6 or obligated.

7 Okay, so in terms of expected accomplishments, then,
8 for this fiscal year, we're going to go through the Phase
9 III Regional Demonstration to build these services. We
10 also have a target of adding ten more states to the system.
11 Again, state participation is purely voluntary. So, number
12 one, they're not required to participate, and number two,
13 they may not have any data to add to the system. So, we
14 don't expect to have all fifty states, ever.

15 Our target is about thirty three states, so we've got
16 eighteen and a half. South Dakota is half a state right
17 now, because we've got their stations, we know where their
18 stations are located, we've got the meta-data associated
19 with those stations, but we're not actually bringing the
20 congestion data from South Dakota yet. So, if we got that,
21 that would be nineteen. If we had another ten more that
22 would give us twenty nine, so we're almost as far as we
23 think we were going to be able to get, in terms of getting

1 states connected.

2 The other big part of it that we look to do this
3 coming year is to work more closely with the private
4 sector. We're afraid that this might be one of the best-
5 kept secrets of the ITS program, and the private sector may
6 not even be aware of the fact that there's all this data
7 out there, available to them.

8 So, we want to foster use of that data, not so much
9 through funding operational tests. The regional
10 demonstration is going to be the real closed activity we'll
11 be doing. But more, just being more aware that the data is
12 there, what it takes to get to the data, how to access it,
13 how to subscribe, and all of that type of thing.

14 We also recognize that this is an R&D system. It is
15 not a permanent deployment, and yet we want to have a
16 permanent home for this process. So, we're working very
17 closely with NOAA, the National Oceanic and Atmospheric
18 Administration, who oversees the National Weather Service.
19 It does this sort of thing for all the atmospheric weather
20 stations, so we want to bring it in to that process.

21 Shelley is in discussions with the director of the
22 National Weather Service. They are fully committed to
23 doing that. How that happens, when that happens, and all

1 the details, we are still trying to hash out. There is
2 certainly some risk involved, but our target right now is
3 to have it all over and into NOAA by mid-2011.

4 We also - our original system requirements had on the
5 order of twelve different quality checking processes that
6 we wanted to run within the system. We originally built
7 eight of those, and so now we're going through the process
8 of improving some of the other quality detecting
9 capabilities.

10 And the other big piece to Clarus and to Road Weather
11 is this whole idea of mobile observations. This was
12 mentioned briefly in the VII discussion, but the fact is,
13 as recognized earlier, there is a fixed number of sensors
14 out there, and there's a lot of roadway that is not being
15 measured. And, as you know, bridges freeze before road
16 surfaces, so you can have very local weather condition, and
17 you're not going to get that, you're not going to be able
18 to deploy that many sensors along your network.

19 How do you fill those gaps between sensors? The
20 vehicle, we think, is the natural way to do that. And,
21 just this whole idea of getting into the bus, to get
22 windshield wiper status, ABS or traction control data,
23 temperature off of the vehicle, all these things that are

1 already being collected on a vehicle, if we can turn it
2 into a valid road/weather observation, that would be an
3 immense asset to this whole idea of getting more timely,
4 accurate, and relevant road/weather information.

5 We're looking at that, and we also recognize that
6 windshield wiper status doesn't tell you, necessarily, that
7 it's raining. It could mean that you're washing the
8 windshield, or not. So, we need to get a lot of data, and
9 we also need to compare that data, say, through a radar
10 mosaic, to confirm that what radar is showing is actually
11 hitting the ground, or not.

12 And so, there is some post-processing that needs to
13 happen with these vehicle observations, to turn it into a
14 valid road/weather observation. What we're working on now
15 is to develop the algorithms to see how to take that data
16 and to turn it into useful observations.

17 So, in 2009, we're estimating about 2.1 million for
18 Clarus. As Shelley mentioned earlier, we also have other
19 projects we're working through the Road/Weather Program,
20 that the remaining money will go into. We're authorized at
21 five million, but what we are actually appropriated is
22 still to be determined. So, there is some gray area there,
23 but about 2.1 million is what we're anticipating for '09.

1 That was about fifteen minutes' worth. Any questions?

2 Dr. Adrian Lund: I have a question. I understand
3 you're doing, potentially, some enhancement thinking, too,
4 by adding mobile platforms, but you have a demonstration
5 scheduled for fiscal year '09. My question is, what is the
6 definition of a successful demonstration? What are you
7 looking to demonstrate?

8 Paul Pisano: Well, it comes back to improved
9 operations and management of the highway system. So, if a
10 state is able to save money by using, say, when it comes to
11 winter maintenance. Some states will go out and spread
12 chemicals any time they see the first snowflake. We want
13 to try to reduce that by more effectively managing their
14 resources.

15 If they have better information through these Clarus
16 services, they may not dispatch the crews unnecessarily.
17 So that would save the impact on the environment and the
18 impact on direct dollars saved by the state DOT on their
19 winter maintenance processes.

20 If they make a decision about when to allow trucks to
21 use their roads because of weight restrictions and the
22 potential damage to the pavement, then that means they are
23 going to be saving money, because they're not putting

1 trucks out there on roads where they shouldn't be
2 traveling.

3 Dr. Adrian Lund: Are you actually going to measure
4 whether they make good decisions, or just whether they
5 avail themselves of the information?

6 Paul Pisano: To the extent that we can actually look
7 at the actual cost savings, we're going to do that. And, I
8 think that that can be done with respect to the winter
9 maintenance decisions, for example.

10 Some if it is going to be more traveler information
11 based. We're going to improve services for travelers.
12 We're going to have to come up with some sort of surrogates
13 to assess whether or not it's actually helping travelers to
14 make better decisions. We may not know that explicitly.

15 Shelley Row: If I could just interject for a minute.
16 I think the other thing, too, as Paul says, that we can
17 evaluate is the actual demonstrations that are done. But
18 the other thing that I think may be a little implicit in
19 the demonstrations is that we can take the data, work with
20 the states, and work with the private sector. They're
21 working, fundamentally, with the private sector to develop
22 some services.

23 One of the things it does is create a market. This is

1 an extremely small marketplace. It's a very niche service,
2 and they don't have research dollars. So, if we can help
3 do an application that both helps the private sector to see
4 how the data could be used for their benefit, and give
5 their potential customer a flavor of how valuable it can
6 be, then we actually seed a marketplace there.

7 And, we have been very successful in the other part of
8 the program, making decisions for support systems, of doing
9 that, creating a market, creating some data that is
10 available that the private sector takes, and then serves
11 that market.

12 Dr. Adrian Lund: So, success implies that somebody is
13 taking it up?

14 Shelley Row: That is right. "Somebody," being both
15 public sector and private sector.

16 Dr. Kenneth Button: These things currently used on a
17 low integrated basis, as far as I understand it,
18 therefore, there must be some information how actually this
19 information is used at the moment, by the private sector
20 and the public sector.

21 The obvious thing to do is, first off, find how they
22 use it at the moment before you move forward. Has anyone
23 been actually asking the people, the clients for the

1 current system, how they use it?

2 Paul Pisano: Well, that is, certainly the states who
3 are the ones investing in the system, they use it mostly as
4 a winter maintenance tool. And as I said through Phase I,
5 we said, "How else would you want to use it," they're
6 recognizing that we would see some other value added.

7 Dr. Kenneth Button: And, I, is it used by the private
8 sector, and in what way?

9 Paul Pisano: Not as much, because it's not available.
10 It's proprietary, so that company who installed the sensors
11 in that state will have the data, but there might be a
12 small company who does road/weather forecasting that isn't
13 tied to the broader community to get that information.
14 Some states are putting sensor observations up on their
15 websites, but not turning that into that value-added
16 information, that we want to see not just what the
17 temperature is now, but what is the pavement going to be
18 like three hours from now when I'm driving on it? There's
19 limited capability out there.

20 There is some of that, but we're trying to expand it
21 out to broader and more sophisticated types of products.

22 Dr. Joseph Sussman: You talked about relatively
23 routine events, rain and snow. Do you deal with unusual

1 events like tornados and dust storms, and that kind of
2 thing?

3 Paul Pisano: The systems are observing at all times,
4 and there, it's a matter of, what do you do with the data?
5 Now, a tornado is usually such a short-lived event that
6 you're going to get your information about tornados from
7 the weather service as it is now, and there's not a real
8 link today to the highway environment.

9 Dust storms and visibility, on the other hand, there's
10 a lot of that. And, there's a lot of use by states to
11 monitor the visibility, whether it's fog, or dust, or
12 things like that. And, they'll use that, like in
13 California, with the fog warning system and such, they
14 would use that to link it to roadsides and such.

15 Randell Iwasaki: These are more on a micro-scale,
16 each little weather station. And to your question, there's
17 no one place to go where the private sector firm can import
18 all of this information to then guide trucks through the
19 Sierra Nevadas with some reasonable information.

20 Dr. Kenneth Button: I was just asking what it's used
21 for?

22 Randell Iwasaki: NOAA's information is more global.
23 So, you see the huge cloud, but you don't know on a micro-

1 scale how the road is icing, is it not, should I send my
2 trucks out right now? And then, from a maintenance
3 perspective, you want to save money. In the old days, what
4 they did was they spread salt everywhere before it snowed.
5 And then the snowstorm doesn't come, and it's windy, and
6 all of your salt gets blown off and kills all the trees on
7 the side of the road, but there's no salt left on your
8 road. Then it does rain, then it does freeze. And you're
9 supposed to create a brine to make sure your ice not stick
10 to the road. So now, you have to get graters, because the
11 stuff is sticking and the road is closed. And so, it just
12 gives you a little bit better information.

13 Shelley Row: Interestingly, Canada has identified
14 salt as a hazardous material.

15 Randell Iwasaki: So have we. If you go on Interstate
16 80, heading to Reno, there are very few trees left alive
17 within a certain range, because it's really alkaline soil
18 now, and kills all the trees. So, we try to limit the
19 amount of salt we spread.

20 Paul Pisano: Likewise, in New Hampshire, they're
21 trying to do a widening of the highway, and they can't
22 unless they can show that they're going to reduce the
23 amount of salt that they use on that road. There are

1 actual ties to other highway improvements because of the
2 salt associated with winter maintenance.

3 Randell Iwasaki: It's not, per se, a hazardous
4 material, but we have to address this issue of salt.

5 Robert Peter Denaro: It sounds like it's a pretty
6 high priority in California. Do you see a lot of value?

7 Randell Iwasaki: Yep.

8 Paul Pisano: Thank you for your time.

9 Robert Peter Denaro: Any other questions before you
10 escape?

11 Scott Belcher: I guess my question, and maybe you
12 mentioned it and I missed it is, so most of the data is
13 proprietary? How is there, it goes to the deployment
14 point. I mean, you've got deployment where the states are
15 getting the data, but how does the data then become
16 available to a companies like Bryan's, who would want to
17 push this data out to consumers?

18 Paul Pisano: It originally had been proprietary, and
19 there have been a lot of restrictions that the companies
20 would put on the states who are procuring the systems. As
21 it is now, if the state provides data to the Clarus system
22 that data is available to anybody.

23 Scott Belcher: In real time?

1 Paul Pisano: Near real time. It takes a couple of
2 minutes to run through the quality checks. And also, it a
3 question of how often the states poll their stations. They
4 may do it every fifteen minutes, every thirty minutes, or
5 every hour. So, it's only as frequent as the states are
6 polling it. Once they poll it, we get it, and within
7 minutes it's quality checked and out there.

8 Scott Belcher: Do people know it's available now? Do
9 companies know it's available?

10 Paul Pisano: Some. We work very hard with the
11 private sector. And, I forgot to mention, next week, we
12 have our big stakeholder meeting. We've got about eighty
13 people coming in, both public sector and private sector,
14 weather community and transportation community, private
15 sector. We have Barent Services, some of the data users,
16 QTT and such, are going to be there. So, some people know
17 about it who have been participating as part of a
18 stakeholder group.

19 As I mentioned earlier, I don't think we've done a
20 good enough job raising awareness about it, so, I think we
21 need to do more. I know Pete Costello at INRIX has been
22 active in our stakeholder group, so he's aware of it. But,
23 whether or not it is out there and is broader, I don't

1 know.

2 Shelley Row: One of the measures of the effectiveness
3 of a program is how much has the private sector picked up
4 the data and used it? We don't try to have any control
5 over who it is, because in some cases, it might be someone
6 at Bryan's company, or it might be a weather provider who
7 is going to take it, weave it into the forecast, and then
8 provide that forecast to a company like Bryan's company.

9 We don't care, as long as they're getting good quality
10 road-specific micro-scale data. And, that is what has been
11 missing all this time. And we're hoping that if we can do
12 some of this work, that that market will develop, and that
13 it will create a pool so that they can go further with it.

14 Paul Pisano: Getting back to the point of the
15 previous question. The whole private sector, whether that
16 is between public and private, we see the public sector
17 role as the facilitator, by running the quality checking
18 processes, then providing data. But then the private
19 sector and let other people take the data and run with it,
20 and do good things with it.

21 Robert Peter Denaro: Thanks, Paul.

22 **Congestion Initiative**

23 Shelley Row: This is Brian Cronin. Brian manages the

1 Congestion Initiative, which you're going to hear about
2 now, for the ITS Program. This is obviously a DOT-wide
3 program. He also manages the Integrated Corridor
4 Management Project, which you will hear about next.

5 Brian Cronin: The Congestion Initiative is multi-
6 modal, multi-agency funded, and managed through OST. It is
7 being funded as part of ITS Program, as well as with funds
8 from FTA, and the Federal Highway Administration.

9 So, I just thought today, really, if you ask, "What do
10 we do this year?" Really, what we are doing is getting the
11 money out and awarded, and trying to work with the
12 locations we've selected to actually have the legislative
13 authority and implement the project.

14 So, the big fall out, New York, did not get their
15 legislative authority. We pulled their money back. We
16 have then selected Las Angeles and Chicago. There was only
17 a small amount, five million dollars of ITS money that was
18 going to New York, so, just that money was reallocated,
19 three and a half million to Chicago, focusing a lot on bus
20 rapid transit technology, and sort of supporting that. The
21 rest of the money is going into the evaluation pot to
22 support adding L.A. and Chicago into the evaluation.

23 The biggest thing is Minnesota, and that's fully

1 funded. Seattle, as of, actually, this week now, they have
2 half of their money, so this number now up to about 44
3 million dollars.

4 The biggest activity, really, for the JPO is, we're
5 leading the evaluation. So myself and Jane Lappin, and we
6 have representatives from the modes and the Secretary's
7 office looking at, how do we evaluate these different
8 implementations? What do we look at? What data are we
9 trying to generate? How are we going to show impact on
10 congestion?

11 And so, we selected an independent evaluator. They
12 have gone out, actually, this week they're in Seattle, next
13 week they're in Minnesota. We've already been to Miami
14 several times, trying to look at how are we going to get
15 this data, and how are we going to show that for tolling
16 transit technology telecommuting, we're impacting
17 congestion? So, that's where we are this year.

18 Bryan Mistele: Weren't there two other studies, like
19 San Diego and Miami, on the list?

20 Brian Cronin: Yes, our five original partners were
21 Miami, New York, Seattle, Minnesota, and San Francisco.
22 New York is out, and we've added L.A. and Chicago. In
23 addition to ITS money, there was fifteen million of FDA

1 transit money and three million of ITS money going to San
2 Diego for an automated bus guidance application. So, we
3 haven't awarded ITS money. We're going to do that next
4 year. We've been finalizing the scope and so forth.

5 So, the next year, in the fall, we're going to have
6 documented, sort of the whole evaluation and framework, how
7 we're looking at all of these different cities, and how
8 we're going to answer the objectives questions we posted.

9 In the spring, we hope to have detailed specific plans
10 for all the sites, and most of them are operational
11 September of '09. That is the deadline we put in our
12 agreements. Miami is actually looking - they have a Phase
13 I, their first phase should be operational at the end of
14 August, or early September. We have another 40 million
15 next year.

16 I'd be happy to answer any questions, if you want to
17 know what ITS is getting out of it.

18 Joseph Averkamp: One of the questions do I have, and
19 this goes to part of the vision about managing demand, is
20 telecommuting is part of the initiative? Is anyone
21 actively pursuing telecommuting?

22 Brian Cronin: Minnesota is the most active. They
23 have been partnering with Best Buy as a major employment

1 center. And they have instituted, I can't remember the
2 name of it, but they have a special program that they're
3 focused on, and so they've probably taken that and doing
4 the most advanced amount of telecommuting along their
5 corridor. San Francisco, Seattle and Miami are all doing
6 something.

7 We didn't get as big a response on that element as we
8 were hoping for, but it is a part of what we are trying to
9 do.

10 Robert Peter Denaro: Is VMT tolling part of that?

11 Brian Cronin: What's that?

12 Robert Peter Denaro: Is Vehicle Miles Travel Tolling
13 part of this?

14 Brian Cronin: No.

15 Joseph Averkamp: Do we have an urban partners
16 discussion?

17 Shelley Row: This is it. These are the urban
18 partners.

19 Brian Cronin: Most of the ITS funds are going towards
20 open road tolling. However, in Seattle, most of the
21 resources are active traffic management, a sign to look at
22 how you actively manage that freeway network. And in San
23 Francisco, there will be a lot of ITS money put into 511

1 and traveler information enhancements.

2 Randell Iwasaki: When is Washington going to do the
3 Active Traffic Managing, because we have an 80 million
4 dollar contract that is getting designed right now on
5 Interstate 80, heading toward San Francisco/Oakland Bay
6 Bridge? Are they going to be within a couple of years,
7 because we're within a couple of years of doing that? We
8 can certainly give you information on that when we get it.

9 Brian Cronin: They're supposed to have everything at
10 this point up and running by September of '09.

11 Randell Iwasaki: Really?

12 Brian Cronin: Yes.

13 Randell Iwasaki: Have they gone through the
14 environmental process yet?

15 Brian Cronin: I'm not sure, yet, to be honest with
16 you.

17 Michael Replogle: There is also a component of, in
18 the San Francisco EPA that deals with parking pricing and
19 parking management in the downtown. Is there an ITS
20 component to that?

21 Brian Cronin: Yes, there is no ITS money, but it is a
22 massive ITS implementation. It's just sort of using
23 different money. So, they have both on-street and off-

1 street parking. They have 26,000 spaces that are publicly
2 owned and operated.

3 Actually, I was just there last week, and they are
4 piloting, just even before they get our money basically,
5 parking which uses mesh networks, and communication with
6 in-space centers to monitor the space availability, and
7 then be able to go with various different payment options.

8 But to look at how they take that information and put
9 it into the Trip Planner, or different outreach mechanisms.

10 Dr. Kenneth Button: Just the public sector parking?

11 Brian Cronin: Yes.

12 Dr. Kenneth Button: Why not private?

13 Brian Cronin: Why not? They would love to have the
14 private. There are a few major private operators trying to
15 get in.

16 Dr. Kenneth Button: Well, it's simple. Just put the
17 monitor on the road, outside the car park so they can
18 measure the cars going in, and the cars coming out. You
19 don't need the private sector to participate.

20 Robert Peter Denaro: There's actually a story that
21 goes back fifteen years ago. The first system that did
22 that was in Gothenburg, Sweden, and they actually went in
23 and dug up the road in front of all the parking lots, and

1 put the sensors in there, and then they were done with it.

2 Dr. Kenneth Button: Exactly, you don't need the
3 private sector's participation.

4 Shelley Row: We will have to tell San Francisco.

5 Michael Replogle: And parking management pricing is
6 really the centerpiece in Chicago, where there is no
7 roadway pricing. So, is there an ITS component that you
8 expect to be funding in Chicago dealing with that, as well?

9 Brian Cronin: No. I mean, essentially, in Chicago,
10 we've provided transit money as a negotiation. They're
11 doing the partner pricing, and they're hiring a
12 concessionaire. So, we have some money going for
13 evaluation, and we have some money as part of the transit.
14 That's it.

15 Michael Replogle: As a part of these evaluations
16 plans, I'm thinking back to, this goes, probably it dates
17 me, actually, back in the last 70s and early 80s, US DOT
18 used to have something called the Service and Methods
19 Demonstration Program, which basically tried to promote
20 best practices and gave money for innovative strategies to
21 local governments' transit agencies and transportation.

22 And, there was a US DOT funded component called
23 Service and Methods Demonstration Briefs, which worked with

1 the evaluation contractors on these initiatives to,
2 basically, fund monthly reports for the public around the
3 country on what was the progress in these projects, and
4 what could others learn from these best practices as they
5 were being evaluated, and as these initiatives were being
6 designed, and as they unfolded.

7 So others in other states and communities could see,
8 what does it take to get one of these up and going, what
9 are the factors in evaluating, and what is being learned as
10 it is being learned? So, it was more of a cooperative
11 learning progress.

12 I'm wondering if there is any potential for that kind
13 of a framework here, so that you could make sure that the
14 evaluation plans and frameworks that you're helping to fund
15 for these partnership initiatives, get properly
16 disseminated and provide for this kind of collective work?

17 Brian Cronin: We have a communication plan as part of
18 the evaluation scope. That's something we're looking at,
19 how much we do and in this next year versus a couple of
20 years out. We're trying to put on the grid, now on the
21 website, as much information as we have. We have fact
22 sheets about each of the urban partners, and what they're
23 trying to do. But, that is a good idea, to look a little

1 bit more.

2 Dr. Joseph Sussman: Is it worth looking at any of the
3 political side of this, why it went down in flames in New
4 York, to try to understand some of the impediments to
5 implementing these kinds of schemes? Or, do you view it as
6 so obvious that it's not worth studying?

7 Brian Cronin: I think New York is looking at - we
8 aren't finding anything specifically at the moment, as to
9 evaluating why New York didn't get the necessary authority,
10 I think New York is looking at that. And maybe, our
11 pricing office, I haven't talked to, their document is
12 something on the side. A lot of it was a political issue.

13 Dr. Joseph Sussman: If we're interested in barriers
14 to deployment, obviously, there was a pretty big barrier to
15 deployment.

16 Michael Replogle: It was really a failure of deal
17 making. It was a problem in the relationship between the
18 mayor and the legislature, more than anything else.

19 Shelley Row: Just so you know, a little more
20 background here, too. One of the real challenges with the
21 whole UPA Congestion Initiative is how many different pots
22 of money went into this?

23 Brian Cronin: At least ten.

1 Shelley Row: Okay, and each one of those, you can
2 probably appreciate, have different requirements on the
3 type of money. So, when the applications came in, then the
4 team had to go through the applications and figure out what
5 was a worthy project, and then mix and match pots of money
6 to fund different things. Nobody had evaluation money but
7 us. And then, of course, there was much more money
8 requested than what was available. So, we had to be very
9 strong in carving off money to do evaluation.

10 And our question was, what do you evaluate? Do you
11 evaluate the ITS portion since it's ITS money, or do you
12 evaluate the initiative? And a lot of the questions are
13 about, really, about did the premise work? And so, we're
14 actually kind of evaluating the whole premise.
15 The difficulty is that the money we have for the evaluation
16 is going to be stretched pretty thin to do the evaluations.
17 So, we're trying to stick to the netting, and that's why
18 you see us really focus on those specific locations.

19 Michael Replogle: How big is the evaluation budget?

20 Brian Cronin: It's now up to about 6.9 million, but
21 you've really got to look at that, out of 8 million
22 dollars. Don't look at it out of a hundred.

23 Dr. Kenneth Button: By evaluation, evaluation means

1 you're putting a money value on it? Basically, what do you
2 mean by evaluation? How are you defining evaluation?

3 Brian Cronin: We have four key objectives, and what's
4 the impact on congestion by the implementation, mainly, of
5 the pricing? And that is question one.

6 Question two is the associated impacts to transit to
7 ridership go up? Does the arterial run better? What was
8 the impact on the environment? What was the impact on the
9 freight goods movement? And the question, what is the
10 associated impact, is the same. The sublevel under that
11 and what we are going to focus on is going to differ, site
12 by site.

13 The third question was, the lessons learned and not
14 the outreach, but certainly the communications and policy
15 related to the decision making.

16 And the fourth one is cost benefit. I'll just leave
17 it at that. I was here in the morning.

18 (A bit of laughter)

19 Dr. Kenneth Button: It's politicians taking on a
20 particular piece of jargon, which they particularly like
21 the sound of.

22 Robert Peter Denaro: Any other comments from the
23 Committee on the state of the art, or the deployment?

1 Brian Cronin: I think you will see, if you've read
2 the Secretary's announcement on the new plan, the Urban
3 Partnership, and the pooling of resources, and the multi-
4 modal nature, is all sort of stemming from this idea.

5 Scott Belcher: From my standpoint, I think the real
6 value of this is that, as we go into reauthorization of the
7 transportation bill, one of the great challenges is really
8 being able to articulate deployments and benefits, where
9 things have actually happened, and what the results of
10 those are. And, this gives you some very large, very
11 visible case studies that you can point to. So, I think
12 that's the greatest value, in my book.

13 Michael Replogle: I would agree with Scott, and I
14 think this initiative, perhaps, more than any other in US
15 DOT is kind of breaking the ice of looking at integrated
16 holistic approaches to managing transportation networks for
17 high productivity and high system performance, and doing so
18 in an effort to try and get at a better cost effectiveness
19 and trying to break through some of the political log jams
20 around more integrated approaches.

21 And at the same time, I think there have been some
22 real challenges in conveying the benefits and the
23 attributes of this program to the Congress, in particular.

1 And so, I think we've seen some signs that congressional
2 support for this program has been less than strong.

3 I think one of the biggest challenges, going into the
4 coming year or two, is how to convey the benefits of this
5 in a way that shows that this isn't a partisan thing, and
6 this isn't about privatization. It isn't about trying
7 to destroy transit, or this isn't anti-rail, this isn't anti-
8 Smart Growth.

9 This is something that can, in fact, be used as an
10 effective instrument for harnessing federal transportation
11 resources in a way that, again, focuses on the fundamental
12 purpose of the program, getting good value for the customer
13 and the tax payer out of that.

14 So, figuring out a way to sell this more effectively
15 on Capitol Hill, I think, remains a challenge for US DOT,
16 and I would encourage you to redouble efforts in that
17 arena.

18 Dr. Joseph Sussman: Shelley, is there anything
19 instructive, and I'm not trying to be facetious about this,
20 to ask about how the monies were coupled together to do
21 this? It's sort of unusual in the context.

22 Shelley Row: It was very unusual. I've never seen
23 anything like it in my career. It could not have happened,

1 had it not been for such strong leadership out of the
2 Secretary's office. That is the only way you could get
3 around a billion dollars.

4 So, it was that, and then we had the continuing
5 resolution that freed up a lot of money. So, those two
6 factors came together at one time, that enabled the
7 Department to put so much money together in one spot.

8 Brian Cronin: It started just with ITS and Value
9 Pricing. So, you had 130 million in discretionary money.
10 Then basically, the rest of the money was earmarked. Then
11 you had 550 million in Transit money, you had another 100
12 million in Federal Highway money.

13 Shelley Row: That was freed up. And then the
14 Secretary's office remains heavily involved, and that has
15 been the glue that has made this work, because it would
16 have been extremely difficult for all those modes and all
17 those different kinds of money to come together, and sort
18 it all out.

19 Joseph Averkamp: If we focus on the safety
20 initiative, as we talked about in the vision, how does this
21 initiative fit in?

22 Shelley Row: Well, the funding for it ends in 2009,
23 so the last bit of money that we provide is in the next

1 fiscal year. So, that's all the money we will have in this
2 program.

3 Michael Replogle: I guess I think that's a concern,
4 because this has been, to my mind, perhaps one of the most
5 promising initiatives. So, I would hate to see that lost
6 in the translation of this program, to focus on safety. I
7 think the safety focus is a good one, but it shouldn't be
8 the sole focus.

9 I guess I would very much hope that this kind of
10 integrated, holistic initiative, and say ITS needs to be
11 embedded as a part of how we think about smart
12 transportation systems, and networks and services. That is
13 part of the vision right there.

14 Brian Cronin: I would agree, but also say, while
15 there is some advancement in research in ITS, most of this
16 is pre-existing technology, so it is really a function of,
17 is there a venue or a mechanism, for looking at how to get
18 the money to implement these? So, hopefully, these
19 demonstrations will prove that this strategy works. Then,
20 it's just a mechanism of money.

21 I mean, there will be some new ways to do pricing, or
22 new ways to get traveler information out, which we may
23 still want to do some research on. I mean, I would agree.

1 You don't want to just give up on safety, but the premise
2 behind this is really, it's more a funding availability
3 issue.

4 Dr. Kenneth Button: I take your point about the
5 demonstrations. To be honest, we've got congestion pricing
6 and things in place in many parts of the world. We've had
7 it successfully implemented in some environments in this
8 country. I'm not sure, I mean, you can do as many
9 demonstrations as you like, but I think there needs to be a
10 change in political will, which I think, possibly, Joe is,
11 in some sense, hinting at.

12 I mean, I think this is in favor of it, but I wouldn't
13 be too optimistic about changing a great deal of minds
14 because there's a lot of experience out there that
15 congestion pricing works, that technology works, the whole
16 lot.

17 I think it is useful, as I say, but I'm not so
18 optimistic that it actually moves you forward, in terms of
19 actual applications, in the long run.

20 Brian Cronin: And I would say that the political
21 conversation that has been had in this country over the
22 last year has probably happened ten years sooner than it
23 ever would have happened. And so, I think that is an

1 impetus for moving things forward.

2 Michael Replogle: And, I think the conversation,
3 particularly in New York, did more to advance the
4 conversation in the nation. And we got, for the first
5 time, an elected city council body of the largest city in
6 the country, voting 30 to 20 in favor of implementing a
7 congestion charge to enter downtown, and to reduce traffic
8 by over 6%, and to fund better transit. So, that is a
9 major achievement. We actually had two governors and one
10 house of the state legislature supporting it. New York may
11 come back in the wake of the Ravitch Commission, to revisit
12 this.

13 And, I think it is not a done deal yet in California,
14 as to whether they will be able to secure state legislative
15 support in the next month.

16 Robert Peter Denaro: We probably should move on.

17 **Integrated Corridor Management (ICM)**

18 Brian Cronin: In Integrated Corridor Management, this
19 is really the premise that states, and transit agencies,
20 and cities have implemented ITS over the last many years,
21 and have sort of optimized the highway arterial and the
22 transit system.

23 But for a user, and operating the system, how can we

1 integrate the operations and management of a multi-modal
2 corridor to make and improve reliable person and goods
3 through-put? So, it's looking at, how do we from a
4 management perspective, share data information, mostly from
5 existing systems between freeway, arterial, and transit
6 operators? And then, how do we take that information and
7 make it also available to the traveler?

8 So, over the last year, we've been focused on working
9 with eight sites across the country to define, really, what
10 is the concept of this system, and what are the
11 requirements, and what will it do, what will these systems
12 be able to achieve, and what are some gaps? And, we've
13 completed that.

14 We are starting to looking at where we completed the
15 testing and modeling of a test corridor. We're looking at
16 how does a locality assess, or what sort of strategies make
17 sense? What are the interdependencies between those
18 strategies, to sort of make that analysis before we jump
19 into a demonstration? So, we've completed that.

20 And, we're just finishing up the process of completing
21 the selection of three of the sites to do this modeling.
22 When we look at the ultimate outcomes of this initiative,
23 it is that we've demonstrated this ICM concept, and that we

1 have tools available for localities to make decisions on,
2 what are the sort of strategies they want to implement?
3 How much management improvement can we get? And so, that
4 is where we're going through that process.

5 We obligated just under 2.8 million so far this year.
6 Let me go to the next one and then we'll take questions.
7 The next year, we will be completing this modeling, this
8 simulation activity, with three different sites, and then
9 we will be selecting up to three pioneer sites to actually
10 demonstrate. They'll be bringing in their partners to,
11 basically, implement and design their system. And that is
12 a proposed budget of 7.8 million, mainly reflecting the
13 cost to do demonstrations.

14 Randell Iwasaki: When you say, "select up to three
15 pioneer sites," are you actually talking about the three
16 pioneer sites you mentioned on the previous page, or are
17 these different sites?

18 Brian Cronin: We made the decision that at the start,
19 and we had eight we were working with, that we're limiting
20 it to those eight. But, we will open it back up to all
21 eight from a demonstration perspective. With that said,
22 they've got to have good costs, and requirements, and data.

23 Randell Iwasaki: So, should we be producing an AMS

1 for one of the pioneer sites you didn't select?

2 Brian Cronin: Well, we have several cities in the
3 mix, but we have sort of committed to a process where we
4 want these sites to define their performance objectives and
5 goals, archive data, and collect it and make sure you can
6 measure it against the goals, and do the modeling
7 simulations to make sure you can actually do the analysis.

8 And so, when we collected and decided on the analysis
9 modeling simulation sites, we needed sites who have a good
10 requirements. So, they decided on their goals and have the
11 available now, or maybe just a limited amount of data they
12 had to go and collect so we could do the modeling in a
13 year, and then have models available to, hopefully,
14 calibrate it and validate it so we can use it.

15 What we're trying to do in this phase is, sort of,
16 prove that out, this analysis process. When we get to the
17 demonstration, we have to model again, because what we're
18 ultimately trying to do at the end of the game, is have
19 this modeling approach that has been used, that's reliable,
20 and that has information that we're using in this next
21 year, to predict and use as assumptions for modeling. We
22 want the demonstrations to validate that those assumptions
23 are correct.

1 So, we will be collecting and evaluating the
2 information. If we didn't model the site now, and we
3 picked them at the demonstration phase, that would mean
4 modeling them then.

5 Michael Replogle: What does "AMS" stand for?

6 Brian Cronin: Analysis Modeling and Simulation.

7 Dr. Joseph Sussman: Can you say a few words about the
8 kinds of models you're anticipating here?

9 Brian Cronin: We're using a demand model. There are,
10 sort of, three classes of models. There's macroscopic
11 travel demand, which puts trips at a regional level, and
12 you have to use that. Then, there's mesoscopic, which
13 looks more at the corridor, in and of itself. And then,
14 there's microscopic, which would look at the arterials.

15 And in the traffic sense, we're using all three,
16 because you're trying to look at how trip choices are made,
17 how they distribute it through the network, and the
18 ultimate results? We're not creating new models. We're
19 using the existing models. What we are doing in the
20 research phase is how you bring these things together to
21 make the appropriate decision making?

22 Dr. Joseph Sussman: Whose models are you using?

23 Brian Cronin: Lots of different vendors.

1 Dr. Joseph Sussman: Are you using many mesoscopic and
2 many microscopic?

3 Brian Cronin: Yes. On microscopic, we have SynchPro.
4 For traffic signal, we have Visa. We've got mesoscopic in
5 a direct model, which is related to DynoSmart Transmodeler.
6 As a demand model, we have a few different names. So,
7 we're bringing in private partners to work with us a little
8 bit. One of our key things is, we're trying to be vendor
9 neutral. We're trying to provide a process and test it.

10 Michael Replogle: Is there an objective here of being
11 able to do these things, sort of, generically, or to match
12 them up with real time traffic observations, so that you
13 can anticipate, that you're going to have a degraded level
14 of service a half an hour from now if you don't take action
15 now?

16 Brian Cronin: Several sites are contemplating that.
17 The modeling that we're going to do initially is at the
18 planning level, to help in choice of strategy. Several of
19 the sites are thinking ahead and trying to make it more of
20 a real-time predictive model than is out there yet. So, it
21 is something that we might include as a part of the
22 demonstration, but we'll see.

23 Dr. Adrian Lund: I'm going to ask a question that

1 really shows my ignorance. Is a good outcome that you
2 increase the number of completed trips through your
3 corridor, or are you decreasing?

4 Brian Cronin: That is a good question. We talk
5 about, really, increasing reliable data throughput. So,
6 the question is, is part of it increasing it, or providing
7 more a transit service? Part if it is just getting the
8 same amount of cars through more reliably.

9 Dr. Adrian Lund: So, the corridors you're looking at,
10 you've got alternative forms of transportation, as well as
11 alternative routes?

12 Brian Cronin: Yes.

13 Randell Iwasaki: We did this in the Bay area back in
14 2000. It's a lot of work. It's a tremendous amount of
15 work, and most DOTs won't do it because it costs too much.
16 But we broke up Interstate 80, because it has parallel
17 routes and it has parallel transit opportunities.

18 So, we looked at number one, how do we sequence our
19 investment so it won't cause a problem somewhere else, by
20 doing an improvement here? And then, it's not less strips,
21 it's moving more people through that corridor more
22 reliably. So, if there's capacity here, how do we then use
23 ITS or other methods, to tie people into other modes, or on

1 a different street?

2 So, you can't take a location where you have
3 interstate X, and there are absolutely no parallel routes
4 or transit. It just doesn't work there. But, where you
5 have highly urbanized areas and multiple options, then how
6 do you put a parking lot in the right location or use
7 transitory development? What are those impacts that allow
8 you to get more people through the system more reliably,
9 and make that permanent mode shift?

10 Dr. Adrian Lund: So, it's decreasing in one mode, and
11 increasing in another?

12 Randell Iwasaki: It could be, yes.

13 Michael Replogle: Is this work integrated with the
14 Travel Model Improvement Program that is funded out of the
15 Federal Highway Administration Office of Planning?

16 Brian Cronin: Somewhat. We are doing model
17 coordination work, but there is not a direct funding link,
18 or anything.

19 Michael Replogle: I guess I would just suggest that
20 there is value in trying to coordinate those efforts as
21 closely as you can, because they're trying to advance these
22 same kinds of tools, and help MPOs and state DOTs make use
23 of these tools. So, I think there's room for a lot of

1 cross-fertilization.

2 Dr. Joseph Sussman: I hear you saying, though, that
3 you're starting with other people's models, a broad variety
4 of them, and that the contribution here would simply be the
5 integration of these models at various scales to produce
6 some kind of integrated tool. Is that what you are
7 proposing?

8 Brian Cronin: We're not going to create a tool. We
9 will work with some of the tools if there is a piece that's
10 not capable of doing, and we need to do that if we need to
11 get the interface to enable that analysis. But, we're not
12 trying to come and create this massive model, or tool, that
13 we will go sell, or just make available.

14 What we're trying to do is work with the model
15 suppliers and agencies, to identify, sort of, whether we
16 need enhance the capability and test the approach?

17 Michael Replogle: You know, as we step back and look
18 at the major questions we're asked about, I'm struck, just
19 looking at your budget numbers. I think the budget that
20 you have here in the JPO program for this initiative is
21 about equal to the budget of the entire Travel Model
22 Improvement Program in the Federal Highway Administration,
23 which is aimed at four hundred MPOs across the country and

1 fifty state DOTs, many of whom are lagging terribly in
2 their modeling practices and using really old, and not very
3 workable, schemes that don't take into account things like
4 time of day or travel.

5 So, I guess it seems to me that there is a compelling
6 case to be made to look at how, I mean, if you have 21
7 million dollars remaining in this program as you go
8 forward, to try to make sure that the results from this
9 program aren't concentrated only in the test sites, but
10 that they really are rapidly disseminated into looking at
11 where are the gaps in all the four hundred MPOs in the
12 country that have a potential benefit of looking at better
13 modeling to support traffic system management, and taking
14 results from what you do here and to raise their own state
15 of practice?

16 Dr. Kenneth Button: Can I ask a question? There's a
17 huge modeling exercise going on, involving massive numbers
18 of redundant physicists, in California somewhere.

19 Michael Replogle: You're talking about the Los Alamos
20 effort?

21 Dr. Kenneth Button: Yes, it's a huge exercise.

22 Michael Replogle: That's a Domenici Special - Senator
23 Domenici.

1 Dr. Kenneth Button: It's just a huge exercise. It's
2 totally wrong, of course, but huge.

3 Scott Belcher: One of the things that I like about,
4 both, this program, as well as the other one, Brian, and I
5 think you've got two good ones, is the fact that they are
6 multi-modal. When I look at a lot of what is RITA is doing
7 right now, and JPO is doing right now, it is highway-
8 centric.

9 And as we go forward, ITS has got to find its way into
10 transit, it's got to find its way into railroads, it's got
11 to find its way into freight management. And so, I like
12 that part of the emphasis. So, if I have a comment, it's
13 that as you continue to refine the safety vision, let it go
14 beyond, because that is important as we go forward.

15 Robert Peter Denaro: Alright, we probably should move
16 on. Thank you, Brian.

17 **Mobility Services for All Americans (MSAA)**

18 Shelley Row: This is Mobility Services for All
19 Americans. Yehuda Gross leads this program for our office.
20 Yehuda has been managing the program for quite some time.
21 He comes from the transit world, that's his background.
22 So, Yehuda Gross.

23 Yehuda Gross: I have my notes, but Mobility Services

1 for All Americans is a product which has a goal, and the
2 mobility product is really, travel management coordination-
3 centric.

4 So, let me give you a very quick background of what
5 mobility service is, why we're doing it, and why did it
6 become a project with a lot of visibility for the sixty
7 four federal programs that paid for transportation and
8 human services?

9 Because of this, each one of the agencies is doing
10 their own thing, with their own clients, and there's never
11 coordination between the transportation that is provided
12 through those agencies.

13 We have established a partnership with nine federal
14 departments, and four of them are very close, because fifty
15 two of the sixty four programs are within four, the
16 Department of Transportation, HHS, Education, and Labor.

17 So, it is a partnership between us and the DOT, and
18 other departments, and a partnership between us and the
19 FTA, which contributed funds in order for us to achieve our
20 goals.

21 The sites that were selected through an RFP process,
22 are eight. We had in mind five. We got 1.25 million
23 dollars from FTA, so we could increase it to eight. And

1 they're going through a structured process of developing a
2 design for TMCC, which is the Travel Management
3 Coordination Center.

4 What we have seen from the very beginning is, we have
5 learned an awful lot. We have met with the human service
6 users through listening groups and focus groups, and we've
7 listened to what they need. So that our concept from the
8 very beginning kept changing as we met with those groups.
9 And this took a period of time.

10 One thing that we concluded is that users want to be
11 treated nice. They said, "We're not being treated nice.
12 We're a specialty transportation and we're not being
13 treated nice. We want to be treated as people." And
14 that's why the Aid All Americans helps anyone who uses
15 transportation.

16 We have also shown that once we guide and we provide
17 technical assistance, we can use a system engineering
18 approaches with the non-classic users of transportation.
19 Of the providers of transportation, only three out of the
20 eight are the classic transit groups, and this is in the
21 big cities. When you go away from the big cities, those
22 are not.

23 And in fact we look at our leadership, there is MPO, a

1 COG, a Work Force Coalition, and they're leading it. So,
2 they're not really being used to design and provide
3 transportation. The agencies, themselves, became users of
4 transportation that was provided by others.

5 So, in order to be able to coordinate between
6 agencies, we have held their hands and shown that they can
7 get really very good results, and, I'll show you in a
8 minute, from every one of those agencies in designing a
9 technical approach, using ITS to solve their transportation
10 problems.

11 Let me go back to what we have achieved in '08. And,
12 I won't be fair if I don't go to the very end of '07,
13 because the concept of operations was delivered in December
14 of '07, which was the basis of where data built afterwards
15 is their design.

16 We have seen that the diversity of approaches was
17 totally different from what we thought, from a
18 transportation provision. We thought we could have a
19 center that was either virtual, or physical.

20 A virtual center is where each agency sits in their
21 own office, and they are somehow connected in the right
22 area network, and they can share information. This is a
23 virtual center or a physical one, where you build a place

1 and people sit there, and really manage and coordinate.

2 Shelley Row: Excuse me, but if I could just interrupt
3 you. I just want to make sure the Committee is connecting
4 with you. I want to make sure you all are getting that you
5 have a whole bunch of human services providers of
6 transportation services. You call on each one
7 individually. And what this project is trying to do is
8 synch them all up. What is your slogan?

9 Yehuda Gross: One vision, one call.

10 Shelley Row: One vision, one call. This synchs them
11 all up, optimizes it, and makes it much easier for the
12 customer, but also makes a much more optimal system. So
13 we're talking about lots of little service providers.

14 Robert Peter Denaro: What are some examples of the
15 different kinds of service providers?

16 Shelley Row: A couple of examples are, who are some
17 of the individual service providers?

18 Yehuda Gross: Well, you look at the individual
19 providers? Brokers provide transportation, so they avoid
20 the legality.

21 Shelley Row: They are like a hospital, or a nursing
22 home, or, help me?

23 Yehuda Gross: ParaTransit is one of the contractors.

1 ParaTransit is a part of it in the area. However, I'll
2 give you an example in Pittsburgh. There are over two
3 hundred contractors that are providing transportation, two
4 hundred.

5 Robert Peter Denaro: What kinds of transportation?
6 Sick and elderly?

7 Yehuda Gross: Sick and elderly, handicapped,
8 specialty children. Again, the irony is that tenants will
9 provide a van ride for somebody who is going to a train,
10 rather than provide a pass and send the person on a bus.
11 So again, that aid, looking at it from a holistic approach
12 to solve the transportation problems of all those that are
13 using and needing transportation.

14 Shelley Row: It's massively inefficient today.

15 Robert Peter Denaro: So, what's inefficient? I guess
16 I'm still not understanding.

17 Yehuda Gross: Very simple.

18 Robert Peter Denaro: If I'm a person who needs to go
19 from point A to point B, I have lots of choices. I pick
20 one and I'm going to get to where I want to go.

21 Yehuda Gross: In human service, they reserve rides,
22 because some of it is entitlement and some of it is just
23 provided as a service to the community. In rural areas,

1 there is no public transportation, so they use the brokers
2 or the services locally, which are community generated, in
3 order to provide some transportation, but not all
4 transportation.

5 Let me give you an example. You've asked for an
6 example. I have to take an elderly to the doctor, okay?
7 The elderly reserves a ride, okay? Before we did any
8 coordination, it started to take effect in some areas that
9 we request, seventy hours before, a ride. Actually, it was
10 they would be scheduled on every third Wednesday to the
11 doctor. So, they become eligible through documentation.
12 So, that is one of them.

13 Now, you can have, and I've heard it from the aid,
14 three vans then starting in the same neighborhood, going to
15 the same hospital from different agencies with one person.

16 Scott Belcher: Isn't part of the issue also that
17 there is also an insufficient supply of services for the
18 handicapped and the elderly? And so, part of this is
19 coordinating not only the private sector, but the NGOs and
20 other folks? Because you do have people who will give you
21 two or three hours on this day for these certain types of
22 people, or this certain type of category of people, but
23 they may not have funding for that?

1 So it is a coordination effort of multiple people with
2 very small agendas. Many of these people will only service
3 a certain category of needy folks.

4 Shelley Row: And, the busses are virtually empty.
5 It's very inefficient.

6 Yehuda Gross: In Camden, for instance, there are
7 twenty six faith based organizations that have volunteered,
8 and are joining that coalition there to provide the
9 transportation. So, it is not just depending on the pay as
10 you go, but also the volunteers that are providing the
11 transportation. Today, they're coordinating with them to
12 become partners, as part of the providers of the
13 transportation.

14 Dr. Kenneth Button: I've confronted this problem back
15 in England, where we have an equally chaotic problem, so
16 I'm quite familiar with it. There's another side to it,
17 then, that is also the health workers that go around,
18 rather than the patient or the person with some disability
19 going somewhere. There's also a delivery of service in the
20 house, in the sense that you get nurses, and cleaners, and
21 auxiliary workers.

22 Is this just for purely for moving around, let's use
23 the word "patient," as it's a generic word to use. I'm not

1 in any way being derogatory, I just need a single word. Is
2 this for moving the patient around, or can it also bring
3 services to the home?

4 Yehuda Gross: We haven't encountered yet, where
5 somebody who delivered a service was entitled to a
6 specialty ride. However, we have encountered where there
7 is an official guide, or help, that can go with the
8 patient, and both are covered under a certain entitlement.

9 So, let me go what we have done in '08. So, I start
10 at the end of '07, which was the concept of operations.
11 Again, they didn't understand what a concept of operations
12 was, so we used different words in order to send a message
13 to "Tell us your story." Then we told them, "Okay, once
14 you have your concept of operations, what is your
15 requirement? You have told your story, so what are your
16 requirements?" Then, we went to, "What are your gaps
17 between your requirements and what you want to do?" And
18 eventually, they could provide a design.

19 June 30 was the due date for all of the designs from
20 eight sites. Yesterday, close of business, was their
21 proposals. They had to give the proposal of how they used
22 their design in order to really build one of those sectors.
23 So this is what we have done in '08.

24 The obligation of \$400,000.00 is for some management

1 assistance and technical assistance. And, the 2.25 million
2 dollars was committed. It is now in the tubes to the FTA.
3 They have added a million dollars to this, so that we will
4 be able to go from two demonstrations into four.

5 Joseph Averkamp: So, the Coordination Center attempts
6 to coordinate rides? Does this consist of, like, is it an
7 800 number, with a database?

8 Yehuda Gross: It's much more than a number.

9 Joseph Averkamp: But, it's a number, with a database
10 that coordinates all these schedules of these various
11 vehicles, so I can do a look-up?

12 Yehuda Gross: What is done today, which is very
13 interesting, in rural areas, because of their needs, they
14 coordinate via telephone. They don't have the funds,
15 really, to establish anything that is similar, or
16 resembles, a center.

17 In the big cities, it's the reverse. They have the
18 funds, but the coordination is not very well. Somewhere in
19 the city, a solution will be found, which will be very
20 interesting. So, in the big cities, we have to get them
21 together, to talk to each other, to agree we're going to be
22 working together. So, it's more of a policy than the
23 technology.

1 Now what happens is, what is done today, is each one
2 takes care of their own patients. So, if it's paid by the
3 AOA, which is for the elderly, they take in their region
4 for the elderly only. And the specialty children was only
5 their own clients. Now, we're looking at seats.

6 Joseph Averkamp: I understand there are these
7 different agencies. I'm trying to get at the specifics of
8 the program. What are we paid to get?

9 Yehuda Gross: So, what we're paid to get is, how do I
10 know it will work if I have to deal with other agencies?
11 How do I see that my money gets service to my customers,
12 and we start putting everything together? We are building
13 a place that is tactile, that you can touch and see, and
14 share it with others. We're taking the total risk.
15 They're giving us money and time.

16 Joseph Averkamp: Does the Center consist of call
17 center operators? Is it a data center?

18 Yehuda Gross: Well, remember, I started virtual or
19 physical? Here's the place where there's two hundred
20 providers, not brokers. It's only one broker, but
21 providers there's a different approach. They've classified
22 them by price. Once a month, they have to put their price
23 for a given route that they're going to serve. So, they

1 are classified, the lower ones, the middle ones, and the
2 higher ones. They put every ride that comes in, as a
3 request for bids.

4 So, from the two hundred, from that layer, they bid.
5 If they can't find anybody, they go to the more expensive
6 layer to provide the transportation, between all of those
7 that either are entitled, or are in the community, the ones
8 that are willing to pay.

9 Another place is very simple. You give us your money,
10 they take it to the leadership. The leadership's approach
11 is, "Give us your money and we will provide your customers
12 all of their needs. The risk is ours." So, it is a
13 dictatorial way to a partnership.

14 Everything is done together. There are six of us. We
15 sit together. We meet on a monthly basis. Right now,
16 there is one agency that leads. So, what we do is we have
17 a database that is shared in some places already, between
18 all of the users of that system. It is not really the
19 riders, but they are providers of the transportation.

20 And then, the users get either one number. There's no
21 wrong door. If you call your agency, you get the answer
22 because they're on the network. You get a central number
23 for that region. So, we really didn't force the 511 or the

1 800, each one is the way they want. One of them decided
2 they were going to have a phone number which is, in fact,
3 in Paducah, one number to serve all.

4 Robert Peter Denaro: Let me ask you a question that
5 we're supposed to answer. From your experience, at this
6 point, what do you see as the barriers to deploying this?

7 Yehuda Gross: You want an honest answer? Political.

8 Robert Peter Denaro: Can you elaborate on that?

9 Yehuda Gross: The same type of a question.

10 Dr. Kenneth Button: My question is different. The
11 same thing happens in the taxi cab industry. There are a
12 lot of little taxi cab operators, and some person comes
13 along with a clearing house, and sends people and takes
14 bookings, and does things. So, it works pretty well in the
15 private sector, in the taxi cab industry.

16 I'm just coming back to your point. Why is it working
17 in these types of services?

18 Yehuda Gross: Why? Because there's no politics
19 involved in taxi cabs. It's a market. Here, it is
20 entitlements, it's provision of transportation which is
21 coming from the top down. The community does not have any
22 rights. Everybody is using it. If they have a car - and
23 there are a whole lot of people that don't have a way to go

1 from point A to point B, whether it's work, entertainment,
2 etcetera. So, you can't really compare the two. Different
3 things drive it.

4 And, by the way, the taxi industry is also a supplier
5 of rides by contract, as needed. So, in Paducah by the
6 way, Paducah has established a taxi service, because there
7 was no taxi service.

8 Michael Replogle: So, a lot of this is the challenge
9 of trying to develop interagency cooperation agreements, to
10 try and better coordinate fragmented provision of services
11 in a framework that enables higher productivity out of
12 whatever resources are in the community for these services,
13 through a tendering process or through other kinds of
14 arrangements? And that is what you're trying to
15 demonstrate, that there are multiple ways of developing
16 these cooperative agreements?

17 Yehuda Gross: It's very interesting. Two big vendors
18 came in and said, "You really have established a new
19 industry." Because, what they did is, they scheduled and
20 were able to put people into cars, not into seats, but into
21 cars, okay? Now, they're also doing between one agency to
22 another. So, they have had to change their software and
23 hardware approach, in order to accommodate this concept.

1 Scott Belcher: This seems like a very obvious federal
2 role, because there's not a market there.

3 Robert Peter Denaro: There's not a national center to
4 do this, otherwise.

5 Scott Belcher: Yet, my only observation, and it's
6 just not clear, is how much cost sharing is going on
7 between the other relevant agencies? I see you all have
8 committed 2.2. How much are you getting from HHS, and
9 Labor, and Energy?

10 Yehuda Gross: That's politics, too. They have never
11 worked together with anyone else, so we said we will take
12 the risk, okay? Now, by the way, HHS has given us money.
13 There is a memorandum of cooperation between HHS, and AOA,
14 and FTA, which was a sign. So, they worked together and
15 they've given us money. Education has given us money, and
16 they have sent people with details to work with us on our
17 internal plan. So, there was a commitment.

18 Remember, once I prove it, then their money becomes
19 good money. Because once they realized their money can go
20 much further than it is going today, and they start to
21 coordinate. More than this, we're working with the
22 transits, too. The transits complain all the time.
23 They're sending me a \$30.00 patient that I can only charge

1 \$2.00, okay, while the broker can get \$30.00. So, there's
2 cooperation there, too.

3 Dr. Adrian Lund: What is a broker?

4 Yehuda Gross: A broker is an area manager for the
5 authorities, for the political authority that is managing
6 transportation. So, what they do is then they go and hire
7 paratransits, small operators, to provide the actual
8 transportation. So, the broker really, in some areas they
9 provide some, then it's really global. If there are "x"
10 amount of people in my community that deserve, or are
11 entitled to, rides, I'm going to give you the amount of
12 dollars for your business. You provide the rides, and I'm
13 going to inspect and see that you're really doing it. And
14 if you lose money, it's your problem. So, there are
15 different ways that brokers work.

16 Shelley Row: This program, just so you know, this is
17 the only program we have, where another agency is
18 contributing money to it.

19 Michael Replogle: I think it's a great program, but
20 here are the challenges to communicate this effectively.

21 Yehuda Gross: So, we have two evaluations. One of
22 them is the standard one, which is the impact. The other
23 one is a process. Is this a good way for a developmental

1 project?

2 Dr. Kenneth Button: Dissemination is not necessarily
3 producing results. It is getting them out into the world.
4 What is the marketing strategy, and what is the marketing
5 plan? I find there's a bit of a problem with many of these
6 projects. What is your marketing? Who markets your
7 program?

8 Yehuda Gross: Here it is. We have a steering group
9 that represents academia, transit, brokers, vendors. There
10 are seven of them, and we have a committee chair, and we
11 are developing a strategic plan of how to market this whole
12 thing.

13 Michael Replogle: It seems to me, this is the kind of
14 thing that, particularly given the scarcity of government
15 funding for health and human services programs, there's an
16 opportunity here to increase the productivity of how funds
17 get spent, so the results from this need to be disseminated
18 in ways that gets to Congress, that gets through the
19 General Accounting Office, reporting on this, or whatever,
20 so that it is highlighted as an opportunity for increasing
21 the effectiveness of service delivery.

22 Robert Peter Denaro: Okay, Yehuda, thank you. We
23 need to move on to the last one. Thank you very much. And

1 the last one, I think the last one-

2 **Electronic Freight Management (EFM)**

3 Shelley Row: It is Electronic Freight Management.
4 Kate Hartman manages the EFM Program. She also manages
5 quite a number of things in the office. This project
6 completed it's operational test this year. Kate, go ahead.

7 Kate Hartman: Last, but hopefully, not least,
8 although I'm kind of used to being an outliner in the
9 office with this program. It is not a safety program. It
10 is not a mobility program. It's an efficiency and global
11 connectivity program. It's very much focused on the
12 private sector. And, based upon the questions you've been
13 asking, you're going to have quite a few when I go through
14 this.

15 It also doesn't deal with the infrastructure, it
16 doesn't deal with vehicles. It deals with information and
17 about goods moving through the system. It's also probably
18 the only departmental program that deals with Victoria's
19 Secret underwear and Chinet paper plates. So, it's been an
20 interesting project.

21 The accomplishments in 2008 are that we completed the
22 actual operational test. The adoption task was awarded -
23 the funding was awarded almost 600K. You have to do a

1 couple of dollars under.

2 The evaluation final report was delivered in June. If
3 anyone wants a copy, I can provide it to you. I haven't
4 gotten it up on the web, because we're dealing with 508
5 compliance issues before we post it.

6 And then, the most interesting thing that's happened
7 this summer is, we sent out a Request for Information, and
8 this gets to the marketing of a project. You take a step
9 back here, and let me tell you a little bit about the
10 project.

11 It is likened to a FEDEX or a UPS system, in terms of
12 tracking freight through the system. FEDEX and UPS are
13 vertically integrated closed systems. You ship a package,
14 you get on the internet, you check and see where your
15 package is, and that's about where the analogy stops.

16 What this project has done is taken web services,
17 service oriented architecture, information processing and
18 applied it to a supply chain. And the CEFM is the Columbus
19 Electronic Freight Management Project. It was a project
20 done with Limited Brands. They are located in Columbus,
21 Ohio and they have a large distribution center there.

22 And believe it or not, underwear is time-sensitive,
23 and with the design process and the manufacturer, they need

1 to get it shipped in order to meet holidays and fashion
2 trends. And, I'm trying to say this with as straight a
3 face as I can.

4 Dr. Kenneth Button: It's time sensitive because it
5 gets delivered quickly.

6 Kate Hartman: It's February 14, Valentine's Day, and
7 all of a sudden something hits the market that they want
8 their designers try to hit. You wait for the ship to come
9 over, and you've missed the time from the sales end. And
10 it's also with Limited Brands, they find it efficient for
11 them to ship through Air Cargo.

12 Anyhow, they will issue - Limited Brands will issue a
13 purchase order in Columbus to a manufacturer in China, to
14 produce whatever the goods are. They then truck it to an
15 Air Cargo handling facility in Hong Kong. Their customs
16 brokers, freight forwarders, and airlines would all be
17 involved in getting the product onto the belly of an
18 airplane that flies it to the United States.

19 When it lands in the U.S., it has to be processed by
20 U.S. Customs. Their cargo handlers, again, have to touch
21 it, freight forwarders have to touch it, and brokers have
22 to touch it. It has to go to distribution. Trucking
23 companies get into the distributions. Every time somebody
24 touches it, they are processing information about the

1 shipment.

2 What this project has done is try to get this
3 information entered once, and then it follows it through
4 the system. One of the things about this project is it's
5 tracking the information, not the goods. So, there's not
6 an RFID shipper tag on the product. There's nothing being
7 scanned.

8 But what happens a lot of times is the trucking
9 company that wants to pick up the goods from the airport
10 would like to know if the goods actually got on the
11 airplane in Hong Kong? What they have done in the past is
12 sent faxes, emails, phone calls, text messages, what have
13 you.

14 What the web services technology does is allow the Air
15 Cargo folks to input their information that they've sent
16 it, and then the trucking company can shoot out a message,
17 and pull from the Air Cargo services information, without
18 having to call them up and say, "Can you look in your
19 database and see if it got sent?"

20 Web services allows for authorization and
21 authentication over the web to share information to track
22 the product through the system.

23 Shelley Row: One thing, Kate, if I can interject, one

1 point is that there are shippers who do similar things
2 today in proprietary closed networks, which was the FEDEX
3 analysis. This one will be non-proprietary, so it is a
4 web-based service, non-proprietary, which allows those
5 customers like Limited Brands, to use a variety of
6 shippers, where before they would have been locked in to
7 certain ones and brokers.

8 Kate Hartman: And Limited Brands competes their
9 supply chain every quarter, in order to drive the costs
10 down.

11 Flip to the next slide. This is going into what we're
12 expecting to do in '09. Like I said, we have completed the
13 project. It was successful. It showed that labor hours -
14 actually one of the brokers could reassign an employee to
15 more complex tasks because they didn't have to have this
16 one person sending faxes and making phone calls.

17 It also decreased the shipment time by a 12% reduction
18 in the time it took to get from point A to the distribution
19 house. It reduced data entry errors, because there weren't
20 multiple people entering the same information. It also
21 reduced time in the Customs processing, because they could
22 get documentation to the brokers sooner, and get the
23 filings made earlier. So, we think it was somewhat

1 successful. We are now into the adoption phase.

2 Robert Peter Denaro: The user of this is, I'm not
3 completely getting it, is the trucking company?

4 Kate Hartman: No, it's anyone throughout the supply
5 chain. Limited Brands can also, if it chooses, to check
6 without having to figure out where in the system it is, and
7 whether they call the Air Cargo handler in Hong Kong, or
8 whether to call the trucking company in Columbus. And
9 actually, they do that. They have these daily status
10 reports, and they go out and pull the information, and they
11 can see.

12 Robert Peter Denaro: So, help me with more of the
13 scenario, because you mentioned, okay, somebody is going to
14 enter some information in Hong Kong, and it got on an
15 airplane. Is somebody else entering information that it
16 was received in New York, or whatever?

17 Kate Hartman: They have to do that anyway, but now,
18 further down the supply chain, they can check their cargo
19 handler. It's usually a one to one relationship. The Air
20 Cargo handler in Hong Kong is sending them communications
21 with their cargo handler in Columbus. The trucking
22 company's relationship is with the Air Cargo handler in
23 Columbus, not with the Air Cargo handler in Hong Kong.

1 Robert Peter Denaro: So, now it's just visible to
2 everybody?

3 Dr. Kenneth Button: It's got some security advantages
4 or disadvantages.

5 Kate Hartman: Computer security, or homeland
6 security?

7 Dr. Kenneth Button: Homeland.

8 Kate Hartman: Actually, I could tell you stories
9 about working with Customs. Yes, because it could have
10 some positive, in that it goes further into the supply
11 chain. The further into the supply chain you go, though,
12 the more nefarious activities happen. So yes, it could,
13 and Customs folks are interested and aware of this.

14 We're also working with the World Customs Organization
15 to document this and promote it, especially on standards.
16 That's one of the things that is global. We have to have
17 standards that are global. We're working with
18 international standards organizations.

19 Scott Belcher: Kate, is there a reason DOT is doing
20 this? I'm trying to figure out why DOT is doing this?

21 Kate Hartman: It was a different world when we
22 started.

23 Scott Belcher: And maybe, is another reason, because

1 you're targeting a different part of the market that
2 doesn't have the financial resources to build this kind of
3 system?

4 Kate Hartman: It's small and medium people within the
5 supply chain, and some of the smaller trucking companies.
6 And that's actually where we got the biggest success. ODW
7 is the trucking company in Ohio that does most of the
8 Limited Brands shuttling of their goods to their
9 distribution center. And, they have actually taken this
10 and tried to connect it with some of the other supply chain
11 partners outside of Limited.

12 So, it's people who aren't the UPS and FEDEX companies
13 of the world. They have lots of different partners and
14 supply chains. It's the Limited or Eddie Bauer, Demdako,
15 which is an importer of figurines that are sold in
16 Hallmark. And, this is part of the adoption strategy that
17 we're going into.

18 We're starting some case studies, because the Limited
19 Brands project was basically a test case, and it was an Air
20 Cargo case. It was an Air Cargo supply chain. We have
21 branched out into rail and ship, and these are what the
22 case studies are that we've been trying to do, to document
23 the internal investment for adopting this kind of system.

1 The cost to the individual company is basically
2 configuring in connecting to the system. The EFM system is
3 available on a website. What you need to connect to is,
4 you can do it internally, if you have the IT resources, is
5 to connect to the web services, and have your supply chain
6 partners all connect to the web services.

7 We think there is a potential business model here for
8 translation service providers to do this, and configure and
9 connect. But it is available now if a company wanted to do
10 it and had the IT resources to do their existing
11 information systems and their supply chain partners.

12 Robert Peter Denaro: So, Kate, who implements this?

13 Kate Hartman: Well, it would be a couple of different
14 scenarios. Right now, the adoption got picked up by Kansas
15 City Smart Board, which is a trade development group in
16 Kansas City. And they are promoting it, and they are
17 taking on some of the costs to provide translation services
18 in partnership with us, to a number of Kansas City based
19 shippers.

20 Robert Peter Denaro: How do they fund it?

21 Kate Hartman: They think it's important enough that
22 they're using some of their own internal money. We are
23 also providing some funding to do some of these, the engine

1 to start doing a registry, and then to document it.

2 Robert Peter Denaro: You didn't get me far enough
3 yet. I got Kansas City.

4 Shelley Row: Let me just try to do a summary here.
5 The end customers are all of those people who are involved
6 in the supply chain, targeted mostly at the small and
7 medium ones. This would enable many more players to be in
8 the mix at a lower cost to everybody, which is good for the
9 whole supply chain.

10 One of the measures of effectiveness, then, is does
11 anybody care? So, we put out this RFI to say, "Does
12 anybody want to work with us? Do you care enough to want
13 to work with us on these case studies?" And, we were happy
14 and pleased to see a very strong response from a range of
15 companies that covered big to small, from products to
16 service providers, from brokers to shippers.

17 They were all over the supply chain, who came to us
18 saying, "Yes, we think this is interesting and think this
19 could be useful to us. And, we do want to work with you on
20 how we could adopt it, and work with you to make that
21 transition," that Kate is talking about, to use the web
22 services.

23 Kate Hartman: I'm seeing all these faces that have

1 questions.

2 Dr. Kenneth Button: I have a fairly simple question.
3 What is the market failure which prevents the private
4 sector doing this?

5 Robert Peter Denaro: Why didn't the private sector
6 just do it?

7 Kate Hartman: They are. They're starting to adopt
8 it.

9 Robert Peter Denaro: So then, why are you doing it?

10 Shelley Row: Why wouldn't it have happened without
11 this project?

12 Kate Hartman: That is the government's convener of
13 the standards, and bringing partners together to start
14 operational test that usually take several years to do. We
15 started this a number of years ago, and technology has
16 advanced to the point where it makes - I mean, a lot of
17 people can take it on.

18 Robert Peter Denaro: So, is this one of those
19 projects or ideas where you've kind of had to get it
20 started, but once people see the vision, you can go away?

21 Kate Hartman: That is what we're hoping. That's the
22 plan.

23 Michael Replogle: So, is there a potential here to

1 walk away earlier than originally envisioned, given that
2 there's lots of interest in the marketplace, and the money
3 isn't exactly growing on trees, and maybe there are other
4 things that need the funding more?

5 Kate Hartman: I'm not sure, earlier than envisioned,
6 because I think the envisioning was that we would continue
7 dabbling in this for years to come, as any good researchers
8 like to do. But yes, ending it soon.

9 Another case study or two, to just really nail down-

10 Shelley Row: Our internal discussions talk a lot
11 about exit strategies.

12 Kate Hartman: And that is what we are aiming towards,
13 to get out of this. This project really doesn't have much
14 of a life past next year, or so.

15 Robert Peter Denaro: Any more questions from the
16 Committee on this? Thank you, Kate. Are we done?

17 Shelley Row: That's all of it. Those are all of the
18 major initiatives. That's certainly not all of the
19 programs. You can see from the budget, other things are on
20 here.

21 **General Discussion**

22 Robert Peter Denaro: Thank you. That was very
23 useful. Thank you to all of you. We have two or three

1 things left here. One is, we allow time for general
2 discussion of our three questions across all of these, if
3 there are any other comments, although we got a lot of
4 comments during this, so we'll see.

5 And then, maybe just a summary, and then wrap up, and
6 then in general for this meeting is kind of the next
7 steps. How do we wrap this up?

8 And then, there are a few administrative details that
9 we want to do before we leave. Then, there is an informal,
10 optional light lunch from 1:00 to 2:00. If your experience
11 was good with the light lunch yesterday, you might want to
12 indulge again today.

13 So, let's spend a few minutes just kind of opening it
14 up here. Now that we've been able to look at all of these
15 projects in general, we can go two ways. We can either
16 jump into some specific comments you wish you would have
17 said before and want to get out, or we can talk more in
18 general about the three questions of what the JPO is doing,
19 in terms of likely to advance, and deployment.

20 Dr. Joseph Sussman: I would advance the question of,
21 we've heard a lot of different things that are very, very
22 different. Is there some kind of integrating theme to all
23 of this? Is there some kind of base that things can be

1 tested against, to understand whether a particular project
2 makes sense? There is a lot of good stuff, but I fail to
3 see the commonality in many cases.

4 Bryan Mistele: To add to that, you mentioned last
5 night, as a part of this money, there are some
6 Congressional comments on what it should be spent for.
7 Can you talk to that?

8 Shelley Row: I'm not sure if we included the
9 legislation on that. We included the Advisory Committee
10 legislation. And no, there's not.

11 In some of your previous materials we gave you,
12 actually, the legislation for the programs. I would start
13 there, and then go to Joe's question.

14 The legislation has some level of specificity in it,
15 actually. If you trace the history of it, it looks a whole
16 lot like the previous legislation which included not only a
17 research program, but a deployment program. So, the
18 legislation reads like, in my view, a deployment program.

19 But in this legislation, they kept the old language,
20 but eliminated the deployment program funding. So, what we
21 have is legislation that sounds a lot like deployment, and
22 has specific goals related to deployment, and yet is a
23 research program. So, it's a little bit difficult.

1 And in the legislation, it requires a whole host of
2 things. It requires a Road/Weather Program. It requires
3 us to do a long list, and it says we should give priority
4 to things that reduce congestion, that I don't remember now
5 all of the things, but it is a long list of things. Oh,
6 501, which we didn't talk about today, but a lot of things
7 are in there that we have to give priority to. It says we
8 should be educating people. It says we should be doing
9 architecture. It says we should be doing standards. And,
10 it says we should be doing evaluation. So, it gives you a
11 smorgasbord of things we should be doing. Within that,
12 there's latitude to pick and choose, and how to focus some
13 money on research.

14 Now, Joe, I'm actually getting to your question.
15 Several years ago, long before I was here, they went
16 through - the thought process that the program of today has
17 been more of a peanut butter approach. We ought to focus
18 the funding on a few significant areas of research. And,
19 they went through an extensive process, with all the modes
20 and came up with these specific projects you heard briefed
21 today. And, they were intended to be problem driven, but
22 they were in certain segments, all of which aligned with
23 the departmental goals.

1 So, they all aligned with the departmental goals,
2 okay? So, that's probably only the uniting theme across
3 all of them, even though some are very specific to safety,
4 and specific to automotive, and specific to track
5 engineering, specific to transit, specific to freight.
6 So, there's no, in my view, uniting theme within the ITS
7 Program across all of them, other than how can technology
8 advance transportation? But, they all align to a
9 departmental goal.

10 Dr. Joseph Sussman: In many cases, it seems to me it
11 wasn't so much a technology question. The question on the
12 elderly and handicapped was mostly an administrative
13 question. It doesn't make it not meaningful.

14 Shelley Row: Technology is the enabler. Actually,
15 I'm not sure, with the exception of VII and maybe a little
16 bit of IVBSS, the technology is there. We're trying to do
17 some things to enhance it. In many of these examples, the
18 role is the convener role. A lot of it is about getting
19 the right people in the role to figure out how you can use
20 the technology to bring it all together, and then evaluate
21 it and get it out to people.

22 Ken, you made some really good points, and we've
23 talked about a lot. We do pretty well in identifying the

1 problem, getting the stakeholders together, working the
2 problem, and getting the product, but we're not so great
3 yet, with that market transition piece. And, that is very
4 difficult. And that is, I think, an area of opportunity
5 for the Program.

6 Dr. Joseph Sussman: But, is it fair to say, Shelley,
7 that we're evaluating a program that, at least in
8 principle, is really in its twilight period? That we're
9 seeing a substantial proposed shift in the way you're
10 going?

11 Shelley Row: Yes, I think that is the opportunity of
12 it, and that is why I think it is so exciting. These
13 programs, many of which you've seen either end their
14 funding this year, or have a little bit of funding next
15 year. But, only three of them, two of them, are really
16 linked together, VII and ICM, that have life in 2010.

17 So, we've got the perfect storm. We have an
18 authorization coming up. We have a series of major
19 programs coming to an end, opening up new opportunities for
20 new programs. So, we have opportunity for strategic
21 direction, new legislation, and a whole new set of research
22 agendas that are open to us.

23 It is a perfect opportunity to be on an Advisory

1 Committee, for example, to think about not only what we
2 should do, but what is the process for getting to what we
3 should do?

4 Michael Replogle: That is why I think setting the
5 goal here is so important. And as Administrator Brubaker
6 laid out yesterday, it's been articulated as sort of,
7 safety as the overarching goal, which has a compelling
8 narrative to it, but I think it is only one aspect of what
9 intelligent transportation systems are about, and about
10 what a reasonable set of attributes of what is the national
11 purpose of the federal transportation program as it focuses
12 on ITS.

13 And so, when I think about an important piece of ITS,
14 it is also getting information so that if I want to plan my
15 day, and I want to go from my home to somewhere in the
16 country that I've never been before, on a business trip,
17 and I don't want to have to rent a car, I want to be able
18 to get seamless information so that I'm not forced into
19 renting a car every time at an airport, because I know I
20 won't have a break in the trip chain.

21 If I go to Europe, I know I can generally do a
22 business trip without having to rent a car. But, when I go
23 in America, I have to rent a car. That is something that

1 ITS can make a difference about.

2 Shelley Row: And, a seamless payment all the way
3 across.

4 Michael Replogle: But, that has nothing to do with
5 safety, and that's just one of a number of attributes I
6 think we do need to have on the table as we focus on what
7 this should be about?

8 Robert Peter Denaro: However, if you look at the
9 goals in general, safety, mobility and environment, I think
10 all three are there. And what I heard Administrator
11 Brubaker saying is, he wants a very, very strong emphasis
12 on safety, but I don't think it implies the other two go
13 away.

14 I think the challenge is, what we're talking about
15 here is the overarching goal, and how are things linked and
16 integrated together? The challenge is going forward, how
17 do you come up with a set of programs which are strongly
18 sold by safety, but don't totally ignore those other two
19 pieces, which are still in there, and of course, the
20 decision on relative funding, and so forth?

21 Shelley Row: If I might take you back to your last
22 meeting. In hindsight, I think we would have flipped the
23 meeting orders. Last time, we talked about strategic

1 direction and this is why, because we have all of these
2 things that are ending, and this great opportunity. And
3 the things we talked about and you commented to us on, was
4 the environmental goal, the safety goal, all about 360
5 awareness, about the vehicle, everything that would be in
6 safety. We talked about the value of real time
7 information, that linking, Michael, what you just
8 articulated, an integrated payment linking. And those were
9 the four things we talked about as strategic directions,
10 moving forward.

11 Where we are now is that it's safety, and then the
12 other ones are still there, but with a preponderance of
13 energy funding intended go toward the safety piece.

14 Scott Belcher: We started on a strategic planning
15 process, and it kind of got stalled for all of those
16 reasons. Is there an intention to re-engage in that
17 process at some point?

18 Shelley Row: That is a good question. Two answers.
19 One is that it has shifted now, obviously, and so we needed
20 to pause while it shifted. The other reason we're paused
21 right now is because we actually have to write a report
22 that has to be delivered to Congress. We are separating it
23 into two documents.

1 One of them is a Program Plan, that will be a report
2 on the current program and the research results, and that's
3 being written right now. The other will be a Strategic
4 Direction Plan, that will be reframed, mostly around the
5 safety goal, but with the work you all contributed to the
6 last time on those other goal areas, as well.

7 So, our intent is to include everything you talked
8 about last time in that Strategic Document, but again,
9 greatly expanding the safety piece, and greatly collapsing
10 the other pieces.

11 So, we're working on that in parallel, and until that
12 is done, we really aren't in a position, frankly, to re-
13 engage the Committee with the kind of next steps for
14 strategic planning.

15 Dr. Joseph Sussman: Shelley, you mentioned
16 reauthorization, which is of course a critical opportunity,
17 but what is the time frame within which the JPO and DOT,
18 more broadly, puts together its proposal for a reauthorized
19 bill?

20 Shelley Row: That's also a good question, and I'm not
21 going to have a good answer for you on that one, Joe. We,
22 at the JPO, have not been involved in the reauthorization.
23 That's in the building at this point. So, I actually don't

1 know where that stands.

2 You have an interesting dilemma, not a dilemma, but
3 just a situation where you have authorization that is
4 coming up at the same time the administration is changing.
5 So, this administration you just saw put forward the
6 document you saw the Secretary just released which is, I
7 think, their parting shot on what they think the direction
8 of the program should be.

9 But frankly, others, AASHTO, ITS America, and others,
10 are developing authorization proposals now. We have not
11 really engaged that much, to my knowledge, in the building.

12 Scott Belcher: There have been a number of
13 initiatives being done by different modes, trying to be
14 coordinated.

15 Shelley Row: We have not been a part of that.

16 Randell Iwasaki: Historically, you don't lobby for
17 positions in a reauthorization bill.

18 Shelley Row: Historically, the administration would
19 put forward an authorization proposal. It's just that
20 right now, the administration is changing. So, I don't
21 think they intend to put forward the kind of detail you
22 would typically do. It will be a new administration who
23 will be working on that.

1 Dr. Joseph Sussman: I guess people read into
2 documents what they want to read into them, to a certain
3 extent. But, at least from my perspective, the statement
4 of Secretary Peters on, her perspectives on the core issues
5 of transportation, did not seem to me to conform very well
6 with what Administrator Brubaker was laying on the table
7 for the ITS Program. Now, that may or may not be a
8 problem, but I'm pretty convinced there's a misalignment
9 there.

10 Robert Peter Denaro: Or different timing. They're
11 not synched together.

12 Scott Belcher: Joe, that might be something the
13 Committee, in our note back or in our letter back, might
14 want to recognize. I don't think Shelley is in a position
15 to be able to answer that.

16 Dr. Joseph Sussman: I understand. I'm speaking now
17 to the Committee that will presumably do another Advice
18 Memo, and go through a process, Bob and I, working on
19 drafting it for the approval of the Committee.

20 But it seems to me that the key question to provide
21 advice on is whether the focus on safety is, in fact, the
22 most productive way forward?

23 Shelley Row: I'm not going to comment. That is your

1 decision.

2 Joseph Averkamp: I think, clearly, the Secretary, I
3 mean, it probably should be part of the Advice Memo, that
4 we request clarification and alignment of the objectives.
5 I do think, I mean, the Secretary clearly has safety as
6 among her objectives, so it's really a matter of, I guess
7 "emphasis" is the word I would use versus "alignment."
8 It's a matter of emphasis. When Paul talks about 70%
9 devoted to safety, I don't know if that's the amount of
10 emphasis the Secretary would place on it.

11 Dr. Kenneth Button: I was going to say that it seems
12 to me that the budget is quite small in total. I don't
13 know how much Toyota spends on research and development
14 each year, but I suspect the budget here is actually very
15 small. And I think having a focus is a good idea.

16 Spreading your peanut butter everywhere is not a good
17 idea, in my view, because you don't get a very big bang for
18 the buck, and the actual marketing problem comes in to
19 this. One reason you have a marketing issue is because
20 you've got diversity of products. If you have a lot of
21 integrated products, it's much easier to integrate them,
22 and sell them, and get people out there to use them,
23 because it's easier to get a brand image, if you will.

1 I mean, some of these projects are extremely
2 interesting and extremely important. But marketing, I
3 think, is very difficult. And therefore, I think you're
4 going to have to say, well how much do you want to put in
5 one area, and how much do you want to put it on?

6 Given the amount of resources, you've got to talk
7 about plopping, I would say, 70% somewhere. And it seems
8 to me that safety might be the one which you can get the
9 biggest bang for. That the environment has to be brought
10 into account in the assessment procedure, I'm not sure how
11 ITS actually moves it forward.

12 And also, it should be taken up by other departments,
13 as well. You have the main bulk of DOT dealing with
14 mobility. That's its main function in life. That's what
15 they do, move people around. So, it does leave safety as a
16 nice area. It's an area ITS has historically been very
17 good at, and some of these projects indicate this.

18 So, I'm not too uneasy with this 70%. I would market
19 it differently, though. I would not say 70% of resources
20 are on this. I would say, 70% of resources are perhaps on
21 safety, but in safety improvement, we also have A, B, C, D,
22 E, additional benefits on the environment, on mobility, and
23 to get them in place where you actually have to have

1 complimentarity with these other areas.

2 So, I don't see it as a bigger problem here. I think
3 it is a case where we're couching it and putting it into
4 place.

5 Dr. Joseph Sussman: I think that will take some
6 crafting and wordsmanship.

7 Dr. Kenneth Button: You may disagree with my view on
8 that.

9 Dr. Joseph Sussman: You commented earlier today,
10 though, that making an artificial distinction between
11 safety and mobility, and throwing out the mobility, I think
12 you used the word "dumb."

13 Dr. Kenneth Button: To get them in place, you've got
14 to pay for them. Safety is one thing which, in the private
15 sector, I think you can sell. Volvo has demonstrated that
16 it can be sold. But the public sector side of safety is to
17 get resources in the private sector, and get money for
18 application, not on the research or development side.

19 But, I think you have to piggyback it all the way
20 around - a lot of it, and I think you can do that. It's a
21 bit like the stuff on congestion tolling. I think the way
22 to piggyback that is on the information system, that you
23 are paying a toll, but you're getting information about

1 congestion levels in different parts of the city, and where
2 you go. That is a product, and the product is multi-
3 dimensional.

4 Dr. Adrian Lund: I would like to suggest that if we
5 talk about this issue of focusing on safety and the other
6 areas, that we not, in our advice document, get into
7 disagreements between the Administrator and the Secretary.
8 That is not the point. I think what we're asked to do,
9 Congress has asked the Department to look at how new
10 technology can be used to improve transportation, and I
11 think it is transportation, generally, it's not just
12 safety.

13 I think that our job is to ask, do we think that the
14 relevant technologies are being looked at? And if not,
15 what are the technologies that we think have just been
16 missed, somehow? Are they being looked at correctly? Are
17 the proposed programs, in fact, addressing the logical
18 uses?

19 I'm hearing some concern in the Committee that
20 focusing in on safety is going to ignore that. It would be
21 good if we had specific examples of what's going to be left
22 out of this equation if safety becomes the target. That it
23 would be within our purview to list what we think is being

1 left out of that, not to get into any comment about whether
2 they should or shouldn't, in some global sense, be limited
3 to safety, but rather, what is it that we think would be
4 left out if that happened? I think that's appropriate for
5 us to comment on.

6 Joseph Averkamp: I think Adrian makes a good point,
7 that maybe in my mind there are two things we need to
8 solicit for, and that is, what are the needs? What are the
9 areas we need to focus, where is the market failure, and
10 what are the technologies that are available?

11 What we're trying to do is match the unmet need with
12 the available technology piece. And I don't know what the
13 mechanism for that solicitation is, or what the process is.
14 Shelley, I'm sure your organization knows how to do that.
15 But for me, I think that's what you're looking to
16 accomplish.

17 Robert Peter Denaro: As a Committee, we have to come
18 to some level of consensus. That is a charge, I believe,
19 so we'll have to do that. But I would just say, I'm not
20 totally in agreement with what I'm hearing about the
21 concern about safety, because my view is, when we started
22 out two meetings ago, this committee said, "There's not
23 enough emphasis on safety. Where is safety?"

1 So, the pendulum was over on the side of the case over
2 here, and now we're sitting here, two meetings later, and
3 saying, "Whoa, what happened? Now the pendulum is over
4 here on this side of the case. What happened to all of
5 that?"

6 So, while I hear us saying it's just a matter of
7 degree, and frankly, I like the idea of a central focus.
8 And I, frankly, support Paul's concern about how you sell a
9 program, and so forth, and have something that is really
10 central to that focus.

11 So, I like those things. We are merely, in my
12 opinion, now discussing how do we assure - look, if it's
13 30%, and everything else is 70%, is 30% enough?

14 Should it be 60/40? I think what we're really talking
15 about degrees here, or making sure these other things don't
16 disappear.

17 Michael Replogle: One of the things that Paul's memo
18 set out is, it's okay, let's have a clear focus on safety -
19 a clear metric to reduce crashes by 90% by X year. I guess
20 that I would personally feel more comfortable if a focus
21 was something along the lines of, say, the ITS Program,
22 should enhance safety while improving mobility, reducing
23 the environmental footprint of transportation, and

1 enhancing the overall system efficiency, or something like
2 that?

3 This gives you a consolidated mission statement that
4 gives you a central focus, but also gives you a clear
5 framework that says you've got to also perform in these
6 other dimensions. And I think there should be clearly
7 articulated criteria for performance on those other
8 dimensions.

9 I would suggest, for example, that ITS could play a
10 significant role in improving the greenhouse gas efficiency
11 of transportation networks, and also managing travel
12 demands, mode shifting, and other factors, managing the
13 overall price and other information to users through
14 seamless fares and seamless information.

15 So those functions also have a role to play. And we
16 could say, this program should also reduce greenhouse gas
17 emissions, or contribute to a reduction of 30% greenhouse
18 reduction by 2030, or something like that, whichever goals
19 might be articulated in the future by the Congress, for
20 example.

21 Robert Peter Denaro: I would completely agree with
22 what you just said. That's why I said we're leading with
23 safety, and by the way, safety creates benefits in both the

1 environment and mobility for the very reasons we know. But
2 given that, there are still additional things that need to
3 be done in each of those categories, and here's what they
4 are.

5 And, I also like the idea that you just proposed, that
6 in addition to 90% fatality reduction, we have similar,
7 call it bold, audacious goals in the other areas, as well.

8 Dr. Kenneth Button: I think the reason safety was
9 chosen is because it's easiest to put a number on it and
10 measure it. I think it is much more difficult having to
11 contribute to global warming. There are all sorts of
12 policies out there contributing to it, and figuring out how
13 much ITS contributes, as a percentage, is extraordinarily
14 difficult, and the same thing with mobility. It is
15 difficult. It is possibly easier to measure things.

16 And maybe that is why I'm suggesting, in a sense,
17 leading with safety. As I said just now, I think that if
18 you put these others, and articulated it much more clearly
19 than I did, but put these other things in as being
20 important.

21 Dr. Joseph Sussman: What Michael has advanced, I
22 think, is what we said in the previous Advice Memo, that is
23 once you take a systems approach, which applies a multi-

1 dimensional approach to enhancing the transportation
2 system. It is a nuanced difference, but I think an
3 important one.

4 Dr. Kenneth Button: I would just like to add one
5 thing. The last, or penultimate one, the mobility I feel
6 like, or what I would call, impatient, let's use the same
7 word. That seems to be something also to be mentioned,
8 giving wider access to transportation.

9 Dr. Joseph Sussman: Well, we had that as our initial
10 goal. We put that forward in the previous Advice Memo.

11 Michael Replogle: Access for all is one way of
12 expressing it.

13 Dr. Joseph Sussman: As I say, that was the initial
14 goal that we requested, that JPO look at.

15 Michael Replogle: If you want to weigh a formulary
16 way for accessing all framework, one way that I was
17 actually working with a number of members of the
18 Congressional Black Caucus on framing this in the late
19 years of the Clinton administration, working on how to
20 insure the transportation system delivers, or makes timely
21 progress, to ensure equal access to jobs in public
22 facilities for all, without undue time and cost burdens.
23 And, that's a way of, basically, saying we're trying to

1 make sure that everybody can get around to places.

2 And, ITS does have a potential to deliver that,
3 particularly through enabling things like more effective
4 para-transit, which is another area we really haven't
5 talked about. We started to talk about it with social
6 service delivery systems, but new kinds of real-time ride
7 matching services and para-transit services could easily be
8 enabled by a focus on, how do we use some of these new
9 approaches to information management and logistics
10 management for people and freight, in order to reduce
11 travel demand by delivering better mobility?

12 Robert Peter Denaro: What I would like to ask, as I
13 said before, since we need to reach consensus eventually
14 is, on this topic, we're talking right now about the
15 emphasis on safety, and the degree to which we're more
16 explicit about mobility and the environment, and we're
17 doing a lot of talking. How about the rest? I would like
18 to understand where you are, so can we kind of go around
19 the table with those who haven't talked too much? And,
20 Tomi, if we could start with you, what is your take on this
21 issue, about the emphasis on safety versus the others?

22 Tomiji Sugimoto: I think anything that can contribute
23 to the public with the ITS technology, but of course, ITS

1 technology has many capabilities to improve our society, or
2 our lives. But of course, we should ask of the
3 Administrator, what is the most important thing so far in
4 the U.S.?

5 Anyway, my perspective is that the safety is an
6 essential issue. Also, the greenhouse gas is the same, for
7 emissions is one of the environmental issues. And so,
8 always, we have to think about the sustainability issue.

9 Therefore, personally, I would like to focus on the
10 safety. My background is safety, so it's easy to follow
11 the discussion about safety, but safety and the environment
12 are the most important things.

13 Robert Peter Denaro: Thank you. Bryan?

14 Bryan Mistele: I'm thinking about leading with the
15 safety mission. That's because Ken has said it's been the
16 most measurable and demonstrably impacted by ITS in the
17 past.

18 Having said that, to your point, the Secretary's
19 focus. In this recent memo there was a lot of talk about
20 congestion, so let's make sure when we list a focus on X,
21 Y, and Z, that congestion is also one of those three
22 things.

23 Robert Peter Denaro: Okay.

1 Randell Iwasaki: Safety is our top priority at
2 Caltrans, but we do a lot of different research. I hear a
3 lot about deployment, and I don't think that really in your
4 bylaws to deploy, right Shelley?

5 Shelley Row: It's not a deployment program. It's
6 part of the research title.

7 Randell Iwasaki: So, JPO's job is to do the research?
8 What we like, at least from a Caltrans perspective, is
9 taking those things that work well, and trying to deploy
10 them in California. We're in partnership, with JPO being
11 the deployment arm, which is even better because then they
12 help pay for some of that.

13 But, safety is essential. The problem using ITS is
14 that a lot of your causes of crashes are generally in the
15 driver behavior realm. So, you can put all the signs you
16 want out there, but people that are intent on the cell
17 phone, how do you get your way out of that?

18 Robert Peter Denaro: Some of it is ITS involved
19 attention.

20 Randell Iwasaki: You're right. But, about 90% of the
21 causes of crashes in California are driver behavior
22 related, if you take a look at the Venn diagram. Safety is
23 our top priority. We have to continue to do safety

1 research, which I like the idea of ITS.

2 I think where ITS really helps is in the area of the
3 environment. As Tomi was saying, the environment, safety,
4 and then one of the side benefits is mobility.

5 Joseph Averkamp: I liked Michael's articulation, when
6 he talked about focusing on safety, while simultaneously
7 achieving the other goals. I think it is a very appealing
8 position, and it should be what one of our major thrusts
9 is. But, I also think you include ancillary activities
10 around mobility and the environment. I do think those are
11 also quite appealing to the legislators and the public, and
12 because they're needed.

13 Randell Iwasaki: Can I add something? The other
14 benefit of safety is that it is not an urban or rural
15 issue. You start getting into more mobility research, and
16 the rural states or the rural counties start wondering,
17 "What's in it for us?"

18 Robert Peter Denaro: Good point. Alfred?

19 Alfred Foxx: I agree with what Michael said. It's
20 hard to say that safety is not the priority in any
21 jurisdiction, because then you're saying that you really
22 don't care. But safety is a priority, particularly at the
23 local level.

1 But as Michael indicated, you have safety as a focus,
2 and the are other thing you are concerned about, too, is
3 the mobility, and those issues that you have to deal with
4 on a day to day basis. So, I agree with the focus on
5 safety, but as a matter of degree, is safety 90% of the
6 effort, or is it 70%, or 60%?

7 **Wrap-up**

8 Robert Peter Denaro: I hear pretty good alignment
9 here. I think what I heard is, we're all saying look, one
10 of the reasons safety wants to be the focus, but maybe what
11 we want to do in our Advice Memo is, let's make sure we
12 find a convincing way to say, let's not lose these other
13 areas. In fact, let's make sure we do a good job in these
14 other areas, as well.

15 Dr. Adrian Lund: Let's not just be aware, but measure
16 it.

17 Robert Peter Denaro: Okay, that's what I wanted to be
18 sure of.

19 Tomiji Sugimoto: I have one question that we should
20 discuss, about the business, itself, because even though we
21 focus on the 70%, sometimes on some technology, in order to
22 deploy the technology, and to build into the market, we
23 have to think about the business model, especially if the

1 customer has to pay some money.

2 Basically, the customer has a right to feel the value
3 of everything. But, for the safety, I don't know.

4 Robert Peter Denaro: What I think I hear you saying
5 is, this is-

6 Tomiji Sugimoto: This would be useful.

7 Robert Peter Denaro: So, the business model could be
8 one of our biggest barriers to go into research is
9 something that really returns some benefit? So, I guess
10 our question is, what is DOT's role, or JPO's role, in
11 worrying about the business model?

12 Dr. Kenneth Button: Can I ask a question? Being a
13 humble economist, I think safety is usually dealt with in
14 the economic system for the insurance market. There are
15 two problems, risk and uncertainty. Risk is something you
16 can attach a probability to, and therefore, the insurance
17 market has to cope with it. Uncertainty is something which
18 you can't attach a probability to, and therefore, the
19 market can't cope with it. There's an intellectual
20 distinction.

21 And it may be worthwhile thinking in terms of safety,
22 and trying to look for areas which are not really the risk
23 issue, but more the uncertainty issue, because that's where

1 you have the problem.

2 It's a bit like security in a sense. There are some
3 things we can do to protect ourselves. We don't walk down
4 dark streets and things. But there's a public role, as
5 well. We know that there's a good probability that if you
6 walk through Northeast Washington at 2:00 in the morning,
7 your survival is in doubt, so you don't do it. But, there
8 are a lot of things that we are uncertain about, and that
9 is where the government provides security.

10 And it's the same thing with safety, a distinction
11 between risk, which is a probability-based thing.
12 Insurance companies will pay to reduce that risk, because
13 it reduces the difficulty, or it will increase the premium
14 to cover it the other way around.

15 But, on uncertainty, it's different, and I think it's
16 an intellectual distinction that might be worth thinking
17 about, in terms of where the public sector role is.

18 **Next Steps**

19 Robert Peter Denaro: What I'd like to do now is turn
20 it back over to Joe, and he can talk about our next steps.
21 And, we do have some administrative things to take care of.
22 Joe, do you want to take over?

23 Dr. Joseph Sussman: Yes. First, let me thank

1 everybody for their diligence at this lengthy and intense
2 meeting. We learned a lot. I hope that in what we can
3 write up, we can make a contribution to JPO's future
4 programs. This has been a very interesting discussion.

5 The process that we used the last time is that Bob and
6 I, basically, wrote the Advice Memo and sent it out to the
7 Committee for their review. We came up with a date certain
8 by which we wanted responses, and we got responses from
9 over half of you. We took the assumption that if we hadn't
10 heard from you, you agreed. And since no one howled in
11 anguish once it went out, I assumed you did.

12 And, if that process is one that is comfortable, I
13 think it can work well. In this instance, it can work
14 particularly well, because if we can keep both Bob and me
15 on the reservation, on the same Advice Memo, I think we'll
16 have everybody else on that reservation, since he and I
17 have some points of agreement, but also some points of
18 different emphasis on some perspectives. So, if that
19 process is okay, we would continue with it.

20 Bob, I don't know how you wanted to - did you want to
21 collect this material? I know I've been diligently writing
22 down answers to the questions for each of the twelve or so
23 projects. I don't know if other people have been doing

1 that, or not, but we need to collate those.

2 Robert Peter Denaro: I'm not sure, if people hand
3 them to us, if we can read their writing.

4 Shelley Row: I'm happy to help. I'd love to see what
5 you wrote. If you're comfortable with that, I'd be happy
6 to collect them on behalf of the Committee, and see if we
7 can transcribe them, if we can read the handwriting, and to
8 send it back out to the Committee.

9 Robert Peter Denaro: I think that would be the best,
10 if people wrote it down, I know I integrated my notes all
11 in one place, and then send it back out and let people make
12 qualifications or modifications.

13 Shelley Row: We will just try to transcribe what you
14 wrote and send it back to you, and it will be yours to
15 incorporate as you will. But in the meantime, we get to
16 see what you wrote.

17 Dr. Joseph Sussman: What I did is, for each of the
18 three questions, I wrote a sentence or two for each of the
19 projects.

20 Shelley Row: It's your call, if you want to keep your
21 notes.

22 Robert Peter Denaro: I'm going to have to send you my
23 notes. I have other things on them.

1 Dr. Joseph Sussman: I'm happy, in my case, to pass it
2 on. So, if people will do whatever they feel they want to
3 do, in terms of giving this to Shelley, she and her staff
4 will take the responsibility for passing it on.

5 The other thing that I had left over from last time
6 was the question of meeting during the World Congress,
7 itself. One of the reasons we met now was to have a
8 meeting before the World Congress, to give some comfort
9 with what was going to be presented at the World Congress.
10 I think we all now have a good sense of that.

11 The notion of meeting at the World Congress, itself,
12 was something that had been discussed. Is that something,
13 Shelley, from your point of view, is sensible, or something
14 that is workable, I guess?

15 Shelley Row: Let me start with the workable part, and
16 then we'll go to the sensible part. We have been working
17 with ITS America, and I'm sorry Scott had to leave. We
18 have been working with ITS America on the logistics.
19 According to Scott, he believes he can find us space in
20 some of the local hotels.

21 The problem we're having right now is finding a time
22 to have a day-long meeting, either in one day, or two half
23 days, that either doesn't conflict with an ITS America

1 board meeting, which is immediately after the Congress, or
2 that doesn't substantially overlap with the program. We
3 really hate taking people away from the program.

4 So right now, it is a time availability issue. We've
5 been looking for a day block, again, to split some way.

6 Dr. Joseph Sussman: It's nowhere written in stone
7 that it has to be a full day.

8 Shelley Row: It is not, and that's one of the
9 questions I have back to the Committee.

10 Dr. Joseph Sussman: We ought to ask how many people
11 are planning to be there? If it's not a substantial cost,
12 I know I am. I know Bob is.

13 Shelley Row: Well, one of the motives here was that
14 if you were planning to be there, we would be paying for
15 you to get there, to come for this. So, it was a way to
16 get some of the members to be able to attend World
17 Congress.

18 We can't pay for the registration if it was a half day
19 meeting. I'm not sure, given the cost of hotels, I'm not
20 sure that we could really cover the hotel rooms. But, that
21 was one of our thoughts.

22 Dr. Joseph Sussman: How many people are planning to
23 be at the World Congress? How about a show of hands?

1 So, there is a reasonable number.

2 Robert Peter Denaro: Assuming this is a reasonable
3 representation of the Committee. We're missing a lot of
4 members here.

5 Shelley Row: The other question that you pose, Joe,
6 was is it sensible? And I think it gets to, what is the
7 mission of the Committee for that meeting, and is it doable
8 in half a day, instead of a full day? And, what would you
9 like to accomplish?

10 Dr. Adrian Lund: I think it would be better to meet,
11 and this is partly self serving because I'm currently not
12 planning to go, but there's an advantage to meeting not at
13 the conference, because it's a huge distraction for you
14 guys, for one thing. And so, if you meet around it, I have
15 a feeling you're going to be talking more about what you
16 saw around the Congress and things like that.

17 Maybe that's the right thing. I don't know, but it
18 doesn't necessarily get us, as I was trying to say before,
19 what I think is the thing that we can offer to JPO in
20 advice is to ask the question, "Are there technologies that
21 are glaring in the fact that they have been left out of the
22 research program, or are there applications of the
23 technology that are glaring by their omission from the

1 current plan?"

2 Shelley Row: Adrian, that's a very good articulation.
3 I would add to that, "and is there a clear federal role?"
4 That is the part that always makes me squeamish, is to make
5 sure that there is a clear federal role, that we're
6 serving, and we're not stepping on somebody else's world.

7 Robert Peter Denaro: Another alternative for meeting
8 at the Congress, along the lines of what you said, would
9 maybe be, because I agree with you, carving out two days,
10 or even one day, would be difficult.

11 Maybe a better purpose is to sign us up for a
12 dedicated period, to look at some of these demos, and
13 experience some of the results and so forth, to get a real
14 first hand view, so that we become better informed when we
15 do have that meeting.

16 Shelley Row: So, sort of like a tour of ITS America
17 for the Committee? And, whomever was there, you could get
18 together?

19 Robert Peter Denaro: We could go in there and, boom,
20 get done.

21 Dr. Adrian Lund: A VIP pass.

22 Dr. Kenneth Button: There's a British literature
23 writer who was asked to review seven or eight books a week.

1 He said, "Read them? That would impair my objectivity."

2 (A bit of laughter)

3 Dr. Joseph Sussman: That might well be a good idea.
4 The "agenda" could be getting us some shared understanding
5 of what was going on at the World Congress, as opposed to
6 deliberating, if you will.

7 Shelley Row: Here's the thing I have to go back and
8 check on. You guys are a federal advisory committee, and
9 anytime you officially meet, it has to be published, with
10 an agenda, and we'll have to have a transcriber and minutes
11 provided, since it's a public meeting. So, I need to check
12 on that. I don't think you could meet - I mean, we could
13 say we're going to take this group of people. I just need
14 to check and make sure that it is not a problem.

15 Robert Peter Denaro: A tour doesn't sound like a
16 meeting.

17 Shelley Row: But, to just have you there, you're
18 anywhere and we would just help you. I will just verify
19 that.

20 Dr. Joseph Sussman: I guess, following on, it does
21 make sense to schedule another meeting of this Advisory
22 Committee, maybe a month after the ITS World Congress, so
23 that we can reflect on what we have picked up from that,

1 and this whole set of strategic questions.

2 Robert Peter Denaro: So, we could meet in early
3 December?

4 Shelley Row: At that point, we will have published
5 the Program Plan and the Strategic Plan Document, and maybe
6 we could have you guys help us go to the next level of
7 depth?

8 Dr. Joseph Sussman: The kind of rule of thumb that
9 we've been working toward is something on the order of
10 three, at most four, meetings a year. So that would put us
11 on a four month center, and that would work out.

12 Shelley Row: So, I'm hearing early December?

13 Dr. Kenneth Button: This is after the election.

14 Dr. Joseph Sussman: The World Congress will be after
15 the election, as well.

16 Shelley Row: Let us look at, we'll send out emails
17 and start looking at dates in early December, we will
18 explore the tour thing and make sure we're not crossing any
19 lines there, and we'll work with Joe on follow up.

20 Dr. Joseph Sussman: Thank you all for your
21 participation.

22 Robert Peter Denaro: Before we depart, Charlie did
23 have some administrative things.

1 Carlos Velez: We have some written instructions
2 specific to this meeting, including specifics of the
3 deductions for the meals provided. Paragraph 1B also
4 includes the URL.

5 Shelley Row: For those of you who didn't get lunch
6 yesterday, don't feel you have to take it off your per
7 diem.

8 Carlos Velez: These instructions will also be on the
9 Committee web page and the ITS/JPO website. That URL is at
10 Paragraph 1B. If you have any questions about filling out
11 the expense sheet, at the bottom, on the last line on Page
12 4, it has a number you can call for assistance.

13 Shelley Row: We need them by the end of the fiscal
14 year.

15 Robert Peter Denaro: So, the first and last day, you
16 get 25% of the per diem, if you were here both days? Okay.

17 Dr. Joseph Sussman: I hope I pass this course.

18 (Laughter)

19 Robert Peter Denaro: This is bringing back bad
20 memories for me.

21 (Laughter)

22 Shelley Row: May I make a quick remark? I just
23 wanted you to know, we had all the staff come in and do

1 those briefings. I should have mentioned it while they
2 were all here. I hope that the implicit message you got
3 was that they are extremely talented people, and they do a
4 really good job. They are articulate, they care about
5 their programs, and they love their program.

6 So, any nice words you have to say about them when you
7 see them the next time would be much appreciated.

8 Dr. Kenneth Button: They kept to time, as well.

9 Dr. Joseph Sussman: Thank you all.

10 **Adjournment**

11 (Adjourned at 1:05)

12

13

14

15

16