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**EXCERPTS OF
THE PRESENTATIONS OF**
**Emerging Views on a Future
Air Traffic Management System**

This transcript produced from cassette tapes provided by CSIS.

MR. LEWIS: ..[S]afely and we'll do it reasonably efficiently until you get to a certain level of demand which represents when you establish congestion very much like highways and roads which ever way you want to look at it. Simple Complication Math. In the year 2000 we ran into a serious problem where we actually met what we think is the limit of what this system itself represents and in that limit you're flew it here 2000. You started one day, and you may or may not get to your destination the same day. Oh we had tremendous problems with pilots running out of time. This systems represents where we are it has limitations and we saw that in the year 2000. That probably boils down to 4 things that we see how were attacking them in our plan. It boils down to weather and where you're going and where you're coming from. So if you have a thunder storm, where you're going and where you are coming from you have a problem getting there. So you get delayed that way. You have weather between the departure point and your arrival point that prevents you or makes you fly longer to get there so we have to address that problem. We have other airplanes or congestion, and that could

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mean the military use of things and how that works; not how you get there.

And then we have another problem of how well and how efficient are we to use the capacity that available at the airport. How much concrete is there for runways what kind of navigational gate facilities are there? How well do we orchestrate that entire event? Both from departing and from arriving. And those four factors really represent what we consider to be the capacity problem. So we have a certain amount of demand and we have a certain amount of through put so when things squeeze this through put, so when weather is nice and it's a clear blue sky from east coast to west coast and we have a certain amount of capacity and the system flows pretty freely. Things influence how well we deal with that demand -it could be weather, it could be other factors, it could be simple turbulence, it could be navigation aids out of service which is extremely rare now a days. These things all squeeze that ability to deliver capacity and what happens is that's what you get. What we're trying to do with our operation evolution plan is utilize a number of factors together technologies

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being one. Procedures and new method because we're a lot smarter on how things really work. Utilize technology in the aircraft as well as on the ground. And change up with the way we have airspace. Air Space is a national resource and it's finite. If you consider that from the surface through as far as we can consider aerodynamics going and how high you can fly it becomes finite. So that is a limited asset. There's a lot of it. Problem is there's not a lot of it if you consider where we like to fly. We like to fly to our major hubs. We like to fly Chicago, we like to fly Dallas and we like to fly to New York. It becomes much more finite when you look at it in that perspective. So what we have is that we have a growth path. And our current forecast from the FAA you'll see somewhere in the mid 20 percent of increased traffic through the year of 2013. Our plane currently goes out to 2010 but this year it's going to rollout. It's going to be a rolling 10 yr plan so that we stay on top of it. You'll see new things coming into the plan, and some things being accomplished and leaving the plan and things that don't work leaving the plan. But what we have is we

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have these four quadrants. And these represent the four quadrants. Our entered weather, our airport weather, our end route congestion and our arrival and departure rates represent strategies on how we are attacking those four areas and they represent a capacity increase for each thing that we do in that air space and yield a certain amount of capacity back into the system.

So 5-year we have a calculated goal of what we are trying to achieve which equates to about 30 percent as I was trying to say or more than that. Largest single issue for capacity increases in this quadrant here which is an increase in the number of runways. You have a certain number of runways a handful of runways that are coming in the next ten years mostly major hubs and we really only deal with the top 35 airports in the country that will yield the largest amount of capacity. A total of 12.7 % on the way to that 30 percent that we get just from concrete. After we get a mixture of tools and airspace. And some new procedures and new routing on how you get in. Aircraft are extremely capable. Not all of them but the ones that are extremely capable. And, as

they become capable they can fly different routes which allow better flow into congested areas. New York is a really good example. One of probably the major constraint when you get into an airport is noise. Noise in places where you can't fly because of noise become the inhibitor in how you get into and out of major airports. So as you do that, that large national resource that seems to be somewhat infinite gets squeezed and squeezed and squeezed to where people like to fly. To the point where they really don't have a lot of space left. You must come from up high to the ground, between noise boundaries and some of that gets very complicated. The more capable the aircraft are the more efficient we can become. So we have a quadrant of four problems representing to a series of solutions about 2 dozen solution sets that are strategies. They are not conceptual strategies but they have specific issues such as reducing offshore separation. Accommodating user preferred routing that means that people can fly with the wind if they know where it is and we can keep airplanes separated. And then they translate to well over a hundred specific technology

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air space and procedure programs that we have funded in the FAA that yield some specific results. So in 2002 alone, this is the series of things we expect to have some capacity. The way we were getting onto airports we call ARNAB routes. We have certain routings and that's the arrival and departure piece. We have specific issues going into San Francisco. We had 20 percent increase going into San Francisco just from routing structure.

That's the upper left had quadrant lower left hand quadrant is that as you get into the airspace and get congestion, how we 're dealing with that congestion. Changing Air Space, collaborating with our users. Using certain technology such as a user request evaluation tool, which comes out of the Mitre Corporation, have all helped save #1 several million dollars in fuel alone per air route traffic control center per year. They saved 20-30 percent in delay. Ground delay, just because the air space is more open. A number of positive on that way and we are actually ahead of the curve. I'll say unfortunately due to September 11 because we've been able to have a little breather so we got things in, so as these

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things come in we can get in front of the demand curve. We also have other things that have come into place near 2001. Which has helped us a great deal? NASA has supported us on some tools that have helped increase arrivals up to 5 percent at our major hub which has been a very big benefit. If you think about 5% every hour every day in places that run lots and lots of airplanes such as Dallas Fort Worth which can land 154 airplanes an hour. Were talking those huge numbers of people.

Upper right still technology and better weather. Better weather means that we can make decisions that allow people to continue to fly in and fly out of airports right to the tales time. Without going unsafe and it become the parameters of that. And in the right were still doing a number of things. Day for day out of the air traffic control command center which is our nerve center of how we deal with the management of the nations traffic out in Herndon, Virginia is incorporating new technologies and new things everyday in collaboration wit the users. AS they've done that, delays day for day for m you 2000 2001 are down significantly. So they continue to do

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those kinds of innovations every single day. So this is how these things work from surface to landing we have a piece that addresses each element of a single flight and combining that with all flights is how we get the efficiencies.

Now, a lot of it has to do with not only what were doing on the ground and in the air space but what we need to put as far as boxes on the aircraft and the train that would be required on the aircraft. And that is where we get into the international implications of that. Part of this is that we cannot fence or segregate the fleet that we have in the United States When you talk about a global system. Global harmonization has to be a fundamental premise of this entire strategy. If you think about our cargo industry and how we deliver mail. You think about how we deliver people passengers and goods. The boundary is right there. Particularly for aviation. So what we do has to be in concert with what Europe does what Asia does and what Africa does and what South America does. Our economic ability to do that is different as well as our timing is different as well as the ability for each airline

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central community to be able to deal with those issues from an economic and certainly a political point of view. So we also share a certain amount of information with our neighbors to the North and in the South, Canada and Mexico. We share information with the United Kingdom on traffic flows over the Atlantic. It's very minor in how we do that. As planes travel and we have technologies here in the U.S., they must be compatible with technologies that they would use in Europe.

Same landing systems. Need a very stable environment for that today. It is becoming unstable because we all are in need for the answers to congestion and traffic problems. So as we search for those answers, we run into a number of problems. One who is economically capable to deal with funding research? Who is economically capable of actually dealing with development? There are two significant issues. Research doesn't cost a lot you can get a lot of answers but when it comes development like something for the United States, when you talk about rolling out systems across the country. Hundreds of systems that cost a millions of dollars is larger than the

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entire gross domestic product of most countries in Europe. So we have a significant sizing issue. THE political issue is who do you buy from and what standards do you deal with. Arcayo is where we deal with a lot of standards work. The difficulty there is it takes to long we do not have a decade to deal with this issue we have to deal with it right now. So we have a domestic situation that has only a limited capacity on the aircraft. Would stuff it. By backing it up physically. Cargo planes want to fly cargo and not more avionics and that's the tools that go upfront just so they can fly from point to point. You don't want to have to carry multi mode rate, its like carrying multiple cell phones, because it costs a lot. So were trying to limit the number of things that do that. Here in the US we have a couple of avionics manufacturers that are very well aware of that. They're not necessarily dominant manufacturers in upper Asia. So the collaboration with that is somewhat difficult. So we are all are heading in some of the big factors that deal with that. A lot of the air space pieces and navigational pieces that we're already global such as our GPS which works

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global a lot of people are working together with and come to a reasonable agreement on standards. Reducing their vertical separation requirements is kind of complicated. We want a certain amount between and because of the capabilities of the aircraft now we need less. And so every body's kind of go in to that. Those are relatively simplistic. But the next step such as the NTSBs knows the nomenclature for a certain technology that uses a frequency. What frequency do you use? We'll we know what frequency we already use and what US carriers use, and even what international carriers use for a certain technology. But it won't last. It doesn't do well enough to solve the problem. So you have to go to another frequency. Choosing frequencies is extremely difficult; we think we have the answer. We have an invention by Mitre that's completely clean and does the job. The Swedes also have an answer. We don't think it works but they have an answer. So we have a problem. We need to solve that problem in the near term and it seems difficult to how we get a resolution. So we utilize our RTCA which is our federal advisory committee for recommendations on

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standards but we continue to do that. The key here is to be able to provide the ability for increased capacity where we need it as we need it without providing walls or fences that prevent others from being able to transfer. That's a very difficult proposition. It's something we're aware of we don't think we have it resolved in our plans, but we don't think our plans actually inhibit the progress that we have at stake. The international community is becoming extremely close in this environment because it's important for everyone so everybody has an OEP. Everybody has a plan about how they're going to address this. They don't all match so for us and the FAA and what we're doing. We're pushing the envelope. We're forcing those decisions to come about. And we're going to do that in the best interests of the organization. And we also utilize RTCA for those recommendations and you're control is represent actually DFS is represented there, and part of their roles is to help DoD air control issues, but their not sure what they want to do,. They're really slow moving. So all these programs a number of them that happen in the near term all have international

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implications. Every one of them. So each one of them requires this type of collaboration. And the effort to be able to deal with either an equipment issue for our domestic carriers our international carriers or it requires an international standard in order to be accommodated internationally. So a large effort and sort of difficult for us to deal with. And we are attacking it, eating the one bite at a time we are dealing with each one as we go along. And we'll see how that works. So we'll have a quick speech prepare for the discussion. Thanks Mike.

MR. BARBER: Good morning Jim and Jeff for having me here. Looking at the group its hard to figure out what I can tell you that you already don't know. So what I wanted to do was focus on a forward looking view of what it means to evolve the system. As well as trying to put forth some challenges for the characteristic for the system that needs to exist in order for us to meet the challenges worth all. And let me just emphasize a couple of things that Charlie made to me because I think thy are distinguishing factors the way the aviation system around the world

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works. First of all its aviation in particular and it's a tremendous intersection between public and private. Entities. Both in term of investment financial capability and financial capacity. And terms of policy and in terms of dealing with how do you make progress in a synchronized fashion. As we go to the process of kind of thinking through those changes, we really have to understand what the paying capacity is, what's the investment capacity? Yesterday a number of us were in an RTCA meeting where it became absolutely clear, what the airlines were capable of doing in a given time frame was severely limited by their capacity to borrow money. That was the encroachment that was made. By the same token as we're looking to increase the efficiency of the system. There would need to be investments made both on the ground and in the air that would allow us to get those benefits of the system. So as we think through what's going on we really have to think of the problem kind of in a number of different dimensions. And I just chose to deal with two dimensions today. One is it's a system of systems as Charlie mentioned and the second is that there is

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lots and lots of intersections with the people in the system. And so, as you think about evolving the system and you think about what it takes to get a group of people to interact with a set of systems. If you think about what it takes to people to interact about a set of systems in a consistent way and in an interoperable way and in a safe way, transition becomes the hard problem. The easy problem and I know this fact because I run a research organization. The easy problem is the invention part. Okay? I can invent all kinds of stuff. And in fact I've got lots and lots of wonderful nerds and geeks and I'm sure you have a bunch in your organization as well. That can do all kinds of fantastic things. Technology is not the problem. Signal-processing is not the problem. A satellite is not the problem there's lots and lots of excellent technologies that in fact technology has leap fogged our ability to deploy it. And our ability to afford it to deploy it. So in thinking about systems I want to kind of emphasize and this is a different view of what Charlie just said. There is an infrastructure component to what has to be done. There's a set of

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capabilities tools and decisions for systems both in the aircraft and in the ground that you deploy to help you just like on your computer. You add capabilities. Air Space is a key resource then there's a people component. All of those things have to come together in order to add up and deliver the benefits and evolve the system from an operational perspective. Next please. Lots of stake holders viewpoints. I'm not going to cover this Charlie covered this already. I'll just collect through them. The people want to know how they can absorb the new technologies in a safe manner. The airlines and the manufacturers, can we figure out how we can afford to build it and can we afford to deploy it and in fact in the people have to worry about well how do we operate it, and in fact can I get all of the stuff done in the time that I have to do the job. Okay, this is a chart that I credit to Charlie Huntner, at the White House and the importance of the chart is that it really highlights that there are a number of different operators in the system. Different financial capacities, different passenger carrying capacities, different ability to participate

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in the system, different willingness to invest in the modernization of the system, but in order for the system as a whole especially as we talked about efficiency and capacity to really run at the rates that are possible, everybody has to be at some level of capability. They don't have to all have the same equipment but they have to be at the same level of capability in order to get the benefits that we're talking about especially in highly congested areas of the country. If they don't and this is a public policy issue, then we have to worry about how were running the system and what policies are we using in order to provide access to the system. There was an interesting debate yesterday again at RPCA about, well do you transition away from a first come first serve basis. Do you go to a preferential system? Do you go to basically a hub system in the air space? Lots and lots of different objects. But in order for you to modernize the system you have to deal with all the segments. The vision before Sept 11 and this was the vision that was created probably a year ago, was to move anyone or anything anywhere anytime, on time. And I mean that is the business that Don Barber is

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in. And they got to do it on time. 10:30 is 10:30 and they got to do whatever it takes to get the package there and if they have to rent small planes then they do that. And if they have to distribute it by drops they do that. But that's also the expectation for our passengers who need to get from place a to place b and they want to do it reliably and securely. Before Sept 11th the aviation community was customer focused. Customer convenience was key. We spent the last 100 years on aviation focusing on safety and building safety as an organic component of aviation. After September 11th I think customer convenience will continue to be the focus of the aviation community whether that customer is a cargo package or a person. So we've got to do things safely and securely. So going forward in terms of the systems challenges. We have to add security as an organic component. Now that comes with a price. And the price is that you start dealing with issues of privacy, you start dealing with issues of interoperability of systems. You start dealing with issues of timeliness of information and trying to figure out who should know what when. That becomes

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a key element in terms of how you move the system forward. Go ahead. Okay so in terms of the changes going forward. We've seen this already, the airlines specifically are beginning to accelerate the changes that reduce cost. Those have been done. Old aircrafts have been taken out of the fleet and have been parked. They've looked at different ways to reduce distribution cost of their products, whether that's reducing commissions for their travel agents or increasing the capabilities of their web sites to compete. Or whatever it takes to reduce the cost. Increasing customer loyalty means they're looking for ways to increase the predictability and the flexibility of the service and making sure they don't lose market share. The key to that is and this is an area that has really emerged as a very successful area as part of the preflight. There is one program which Charlie ran, as well as where things are going. Knowing information in a timely fashion allows multiple decision makers to in fact, participate in that system and to participate on their own terms. And that's a key point because the decisions that Ron makes for his airline may or may not be the same as

the decisions as the FAA would take. If you collaborate on the information that collaboration becomes key to building efficiency in a system. So the bottom line is that in fact going forward, because of the economic conditions, because of the constraints whether they're national constraints or international the efficient use of the resources will become more important not less important.. One of the things that happened after September 11th, there was some suggestion, "well okay now that the traffic is going down, we should stop all investments in the modernization of the system because we got plenty of capacity to deal with it. We'll that's precisely the wrong thing to do. Because in fact it takes time to implement that infrastructure it takes time to get the training done it takes time to put systems in place if we are going to deal with capacity challenge that is going to be coming forward. I wanted to put in front of you a set of assertions in terms of what the new system objective will look like. So what is it that we have to do well one is to increase the predictability and flexibility of the system, both with the passengers and the

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operators of the system. Because that is key to the economic viability and the performance of the system. We have to put in place systems that increase the provision of the system and the timeliness of the information. We have tightened the coupling between the air and the ground. Jim talked about satellite system. There is an opportunity for us to prove how we can prove the coupling between the air and the ground. The air craft knows a lot of information the ground needs to know the same information. I've got to be able to change that information, in a timely fashion. Btu in order for me to do that I've got to have all of the participants in the system or a majority of the participants in the system having the same types of capabilities in their aircraft which means that the low end GA the high end GA the business jets, the regional carriers and the commercial carriers have to carry about the same kind of things to be able to get that coupling tightened for us to start operating closer to theoretical limit if you will of what is possible in terms of the capacity and the efficiency in the system. If you don't do that then the people helmet the system force

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you into essentially operating towards a lower common denominator because that is what in fact their able to do. If you don't want to go their then you're going to have to make some decisions about treatment. Segregation of airspace, segregation of access to airports, its easy to tell you that you're going to o but I have to tell you, the amount of emotion the amount of passion dealing with that subject is going to be fairly intense. It's not a trivial thing to say yeah yeah lets do it. Because you've got to get a consensus that it would be a benefit to all elements of the system can go there at the same time. The third principle is , that we have to worry about the flow in the system and by that I mean the following. Before September 11th we were worried about choke points in the system, Charlie talked a little about that. Now the choke point is before you get to the gate. In order for us to get the traffic through the system we got to figure out how to do security better. We have to figure out how to flow people. Right, its about people and the cargo and so forth, through the system at an efficient rate. If my trip from Washington to NY was taken 5 hours, I'm going

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to start using detailed conferencing I'm going to use conference calls, I'm going to start thinking about driving taking the train. The last thing I'm going to do is to fly. because it just after a while the 500 mile trip becomes really an endangered species because I can't afford to rent my own plane. And in fact if we don't think through how to keep the flow in the system whether its in the ground or in the air I think we're going to have, we're going to be losing a lot of opportunities. Charlie talked a lot about the tools so I wont do that. The second big point is that we probably have to look at pricing some resources in the system. Meaning that to the extent that everything is free the behavior will be whatever it is, right. I mean everybody's going to try to get as much of it as possible regardless of the system impact. The airlines all talk about wanting to improve the system and the ad capability that none of the airlines well equipped with something that might provide the competitive advantage to somebody else. Event though it provides a system wide advantage. So the question is how do you incentives the common behavior towards the system benefit. Very hard thing

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to do but were going to have to figure out ways to allow the policy piece, and the financial benefits piece to in fact support that kind of structure. Again politically very, very politically charged issue Okay, so now, lets move to security. What happens in security is that we really have to move away from the single line of defense notion of security. It does not work . If you have a single firewall around your company's commuter systems, I guarantee it will be broken into. So the strategy has to be a defense and depths strategy. Meaning that we got to have security organic to every single component of the system because we know that some parts of the system will in fact either be broken into or will be violated and the key issue is to make sure that we have enough depth in the way that our system are built that not all the sytems will fail all of the time. And in order to do that I have a set of assertions. Clearly knowing what's happening in the system becomes very very important. So if you think about in terms of baggage or baggage checks. its important to know that there was one bag that was detected in LA but its probably a hell of a

lot more important to know that there was one in Los Angeles and one in San Francisco and one in New York and you start seeing the pattern emerge much much quicker than we were able to do. And you got to see it all kind of happening real time. So even though there is security in saying that you got to put some baggage checking equipment in the airports. There's another layer of requirement that's got to be put on and that's I've got to know the status of that detection process pretty much real time.. And oh by the way I'm going to put up with some false alarms to get the benefit of that early knowledge because as you see those patterns emerging, that's when you can be able to do something about it. The other question is in terms of continuity and operations what is our command and control strategy and how do we allow the system to degrade gracefully . The nice thing about air traffic control when all of a sudden done, its very procdedural. The standards, the international agreements the training, everything, when all else fails as long as the aircraft is flying the next step is relying on human judgement and human procedures that are in place in order to land

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the plane safely. There was a key element of what happened on September 11th is that there's a process and procedural training that in fact allowed the aircraft to be landed very safely on time. And then finally the last point is that in terms of our information networks and in terms of how we deal with information, we got to be able to have networks that are self healing. The cell phone system on September 11th did not work. And the reason is that it couldn't handle the peaks and there were single points of failure , the internet worked. And the reason is it had a distributed information infrastructure there were no single points of failure much more reliably get to information to a lot of different places. So with that the challenge to us doesn't get easier to us going forward. Its not just that you got to move everything on time and anywhere but you almost have to know everything and of course that raises the question of personal privacy and again it's a public private intersection of the first order. But a friend of mine asked me after September 11th when we were talking about these issues and said , "well, would you rather be dressed and dead or

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naked and alive. And in fact it's a very good way to think about the problem because it will involve transparency it will involve a different level of information sharing and it will involve a different level of interaction. Its not just about what we do here in the US but its what has to happen around the world. Thank you for your time.

MODERATOR: I'm going to interrupt and put in an advertisement here for another project we have which I'll make sure you people learn about, and its on critical infrastructure protection and a couple of the things we're looking at, are both the transportation system, screening freight and screening people. and also the Identification problem one thing Amherst said triggered this for me. When you collect all this data we probably not going to focus that much on security in this particular project. You collect all these data from different points and it all goes to some central place in real time. Well whose actually looking at it the answer is that no body is looking at it? The answer tis that nobody is looking at it right now. So its not a

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system that's likely to change. We've seen this for other data collection as well. If you had credit card data it could be very interesting. There is no central point to review this. So this is way off the subject so I think that security is probably on the gravel would be the focus of a different project so far it 's hasn't really been encouraging. Next up we have Mike Lewis from the Aerospace commission.

MIKE LEWIS: I'll speak from the floor. I'm going to try and make ten points summarizing my thoughts and views of the aerospace commission I'm not a commissioner. I'll try to represent the commission but I'm not speaking for it, and as a commissioner Bob Walker is the chair of the commission and Peter the co-chair, John Hamre of CSIS is a commissioner as well, but I'll start making ten points first. Starting with general and policy level and then getting to some more specific items. First clearly the ability of any of a nation or society to move its people, good, information and ideas freely and efficiency is basically a first order of indicator of the health and well being and future

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potential of that society. Superior mobility in the US is a national asset and historically has been and continues to be. It fuels the economy gives the decisive edge to the military and brings personal freedom and freedom of movement to the citizenry. So mobility is an important concept that has shaped the country. In fact mobility innovation have made huge changes in the past. Think of the trans-continental railroad the automobile, the interstate highway system. And even the internet mobility of ideas and organization have been transformational changes in moving the society forward. Aviation mobility in particular is a big deal in this country is a big deal in this country. A trillion dollar contributor in this economy 10- 11 million jobs in the system, national security airpower and air transportation purposes and again the quality of life. So mobility is a huge deal for the country, international policy level and I think that you folks well know that. Looking to the future the second point is that if the future indicates that the tithing that mobility seeks to liberate which is time will become ever more valuable. Folks have said that the new golden rule is

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that time is gold. And so you look at things that are happening today that are squaring things forward again the internet just in time manufacturing, next day package delivery, Paid yourself on yourself etc. That's all to take advantage and exploit efficient use of time. So the third point I say all this in theory aviation mobility whether its air transportation is our fastest way to move people and goods. By a factor of 10 miles an hour veers 60 miles an hour on the highway actually even in intra city transportation. Pentagon airlift helicopter vertical lift air transportation across the city is faster by probably a factor of 10. or so than going by car. So it's clearly in the national interest from a productivity standpoint to try and increase the volume and efficiency of the air transportation. Not just for the air transportation industry, to sort of sell more airplanes and employ more people but from a national policy level, to move the economy forward. One percent productivity increase in a ten trillion dollar economy hundred billion dollars a year of value. One percent a year of productivity increase is a difference in doubling the size of

economy in a generation versus two generations. So the productivity gains, that transportation and time saving is a very large deal. A hundred billion dollars a year from a 1 percent one time gain that sticks with it can pay for a lot of stuff perhaps and we can sort of extract that value out of the economy. But right now the average doorstep to destination time for 500-mile trips is somewhere between 35 and 80 miles and hour. So actually from a productivity standpoint there is good news there. There is plenty of room there in getting more efficiencies out of the system and move the people and goods faster and quicker.

So fourth point, unfortunately, as we know our current air transport system currently air transportation system seriously constricts air motilities potential. Door step destination time as I mentioned the time on the liability of a system the added buffers that people add to their trips in arriving at the airport early not knowing quite when their destination therefore, not scheduling the meetings, exactly and so forth at inefficiencies.

Accessibility through crowded hubs and so forth clearly ADDED EFFICIENCIES AND NOW SECURITY uncertainties, time delay uncertainty, what its going to take and what its going to be to add even more buffers. So substantially increasing aviation ability is clearly a real challenge.

The current architecture is reaching the limits of its scalability. <Inaudible> voice radio controller guidance from every flight gate to gate. Limited precision of the radar in tracking the system and so on and so forth. And future demands fueled by this increasing value of time will only add to the need. There are folks, lots of folks will know trying to create new point to point transportation systems but at least the business idea is to add thousands maybe tens of thousands of aircraft into the system to try and exploit the economies need and peoples need for getting places quickly and precisely .

So kind of 5th point for all those reasons just mentioned I mean as a nation seems like from a public policy standpoint we should be looking to not just kind of keep up with and fix today's challenges and ills and catch-up with demand perhaps it makes sense

to be trying to move well ahead of demand and creating the infrastructure to foster this fastest way of moving people and goods around the world and around the system. The air transportation.

So the sixth point, the commission sort of with this sort of rationale with this background observes and sees perhaps of a pretty major confluence of two major items. One is that the clearly long standing civil aviation needs combined with perhaps emerging somewhat new and somewhat historical but needs and capabilities on the DoD side, the military side of things combined with security concerns after September 11th are all happening simultaneously. Any one of those things from an air transportation air infrastructure perspective would be a big deal all by itself. The confluence of all three of these things is a unique event. And the second point is that the opportunity the overlap of these three bubbles, home land security DoD, civil aviation, sort of the valentine beer view of the overlap of that thing. The center of that is perhaps arguably a common infrastructure that can provide to a large degree some of the basic common needs of those three groups.

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So the commission in its discussions of self worth seeks five components. Seventh point here, five key components of that new infrastructure. And not unfamiliar to perhaps folks here. High damn with communications. Precision navigation, precision communications, precision surveillance, precision atmospheric knowledge precision terrain and surface knowledge. Those last two the atmospheric knowledge and the terrain and surface...folks always talk about CNS non mass surveillance. That's a common term. The last two are the weather boundaries and capabilities on the ground airport surface layout and so forth are just as much boundaries as trying to avoid other airplanes in the skies. And so its calm half surveillance plus the atmospheric information, plus the ground and surface information that combine to be the constraining boundaries of the infrastructure and the infrastructure pieces that can be exploited. And all of those pieces are facing the opportunity the technology the information age digital age technology that are more or less here. Perhaps on the near term horizon. Very much will allow quantum jumps in each one of those 5 component areas. High bandwidth, dot

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com work, instantaneous information to all parties in a network infrastructure versus single channel voice radios. Precision naves clearly gas's almost here and is coming perhaps to provide some of that precision navigation, precision surveillance versus today's radars which in the long range measure their accuracy in sort of miles as the units splits of miles any way in terms of knowing where the aircraft are precisely.

Precision atmosphere. Now today it is invisible, turbulence is basically invisible except for pilot reports we look at today, radar pictures smashed of the entire atmosphere and see lines of thunderstorms that we think we can't go through the red. So we're not using precision knowledge of the atmosphere to look for air space really is in fact there, safely there and so on. Right now precision terrain is surface knowledge right now the system is limited by how it deals with visibility or the lack there of visibility seen the ground see the other traffic, seen the runway layout. We can remove that visibility problem from the system with precision knowledge digital terrain maps, clear 3 d displays.

Curiously all 5 of those pieces are arguably best provided for from space So there is an intersection of aviation or space kinds of capabilities that perhaps occurred: GPS, Satcom, terrain mapping, Perhaps tracking from space of traffic etc. all potential vehicles Curiously perhaps even a high altitude long duration air ships might be another way of doing that. But there's a system design choice perhaps to be made. But space if you go that way is most efficiently used. Satellites orbiting the earth do the job for the whole globe not just for one country and so there is international Opportunities but clearly international issues from going to a space based type of system but huge opportunities available from merging the aviation and space communities. Eighth point from the commission standpoint is that the belief of the commission is that the development and the exploitation of those kinds of capabilities of common infrastructure art really open up an entire new era of aviation capacity gains and mobility gains in terms of 2x 3x 4x 5x times types of improvements versus a 10, 20, 30 % evolutionary types of objectives. The commission

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also believes absolutely that the OEP and the current set of plans are absolutely necessary solid approaches to and need to be fully funded approaches to today's needs but are not the. [end tape]

...[O]bjectives or the long term approach to opening up navigational ability based on all that previous information that I just went over. Tenth and last point none of these changes will be possible without a strong national leadership as Charlie well noticed things are much easier said than done. The competing interests in aviation don't have a history of long-term cooperative endeavors and investments. Its far easier to stop change. There's many almost equivalent competing forces in aviation from the business side form the union side from the government side from the private industry side from the small airplane side and so forth. Any one of those voices at times is kind enough to stop things from moving forward. So the leadership necessary and the national mandate and mission necessary to move to some larger effort is a big challenge International leadership and coordination are big challenges as well. The

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rule of systems as Charlie went t over as well the technologies and connections are clearly a challenge but the sense of the commissions is that the design implementation and the organizational need to move forward needs to be a national mandate and a national mission from the highest levels of the administration to create the long term investment and the transformation needed. So in summary the commission sees and sees clearly as everyone else does as in annual losses, productivity, from a national needs standpoint, current ATC system relying on evolved procedures from post world war two basically and systems in the architecture rules that go along with that the coming air traffic command will surely exceed OEP capacity and this is a good thing we want the demand to happen from a mobility and productivity and our fastest mode of transportation. We do have substantial commonality between the civil aviation and DoD needs and homeland security needs. The basic infrastructure calm now the surveillance.

Weather precision surface information in a networked kind of capability information exchange or perhaps the basis of that infrastructure. Challenge for the

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current setup is that the current plans the OEP and what's going on are not budgeted for moving the next step forward for applying the next generation new kinds of technologies and capabilities.

OEP is clearly not budgeted for operator equipment and this is a big deal, huge deal the cost of equipping and the motivations to equip aren't talked about are a potentially fundamental road block to moving forward. As he said its in the network interest to get more efficient and get more capable but it is never in any airline interest to be the first ones to jump ahead and pay the initial upfront cost and the equipment cost. Maybe this won't be the standard type of risk and take that on, so how we can help motivate the early equippers to move ahead is perhaps a major policy question.

I would add sort of 3 issues and agree with what folks have said. International standards are a big deal. Sacrifice and purpose is a big deal, and noise and emissions from the airplane capability is a big deal, you can have all the capacities in the world but if the situation doesn't improve or you start trying to double or triple the amount of airplanes in

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the system the emissions question, from an international standpoint, will raise its head even more than it is right now. Systems limitation to this, to moving aviation ahead and every transportation mobility ahead, and there is also air vehicles sorts of limitations for the noisiness. So, the last thing the commission has put out in its second interim report; the recommendation that a national objective be to move capacity substantially ahead of anticipated demands and is suggested or recommended that a multi agency task force try and take advantage of this commonality of interests and basic needs from DoD, homeland security civil aviation be pulled together with a mandate, <> try and take this quantum step in this air transportation system. And secondly, the commission recommended that the OEP be absolutely fully funded to be the interim carry through to the next generation kind of capability and as well as the necessary R & D, and agree with what Charlie said that the "D (R&D)" is way more expensive than the "R (R&D)". But, there are developments from the previous research that clearly can be exploited. There are some new

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research capabilities that will allow major exploitations in the coming years, as well. In fact it's just mentioned one on the weather side. Right now weather models are not too bad. The math behind them is actually not too bad. Their initialized with very sparse information on the order of hundreds of soundings over the US twice a day every twelve hours. Some oceanic information coming out off of soundings and so on and so forth. The opportunity potentially coming up in the next coming years with new sensor space based, sensors, is to move to initialize those weather models from a couple of hundred, few hundreds soundings every 12 hours to tens of thousands of sounding every 15 minutes to initialize the models. So, the opportunity for real time, precision, three dimensional knowledge perhaps even seeing clearer air turbulence from space is perhaps maybe coming. The exploitation of really all these next generation steps can be a really very, very big deal. So the opportunity from the commission standpoint the commissions sees the opportunity here. Organization policy question clearly for long term investments but from a national need a national productivity

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standpoints. Not just support of the aviation ministry something that we can't afford to miss the opportunity.

MODERATOR: Thank you very much. And now I think we'd like to open the floor up for I'd say about ten, fifteen minutes of discussion. I don't know if anyone has a question they'd like to start with.

QUESTIONER 1: I'm Barry Valentine from the General Aviation Manufacturers Association. Question for Amr. When you use the expression pricing system resources. Finance utilization efficiency, what do you mean by utilization efficiency.

ELSAWY: So in thinking about, I'll come at it from couple of perspectives, One is, if you think about the capacity at a particular airport, per say. There's a theoretical capacity that says here's how many airplanes we can land an hour in a particular configuration. If it turns out that the access into that airport, and the access into that runway is

going to go towards a lowest common denominator perspective, then in fact you're not going to reach the capacity of the airport and the ability of various airports to use it is drastically different. So, that's one point. The second point is that the procedures that are in place essentially allow you to go towards the classic if you will as opposed to the high end equipped aircraft. Not only are you not using the capabilities in the aircraft but you're not using the capacity on the runway. By necessity you'll find that the rates you are achieving at a particular airport even if it's fully pressurized. Will not be at the rate that you could use the airport for. So that's one way to go. LaGuardia is a wonderful example. In LaGuardia the resources experience dramatic increases but the fact of the matter is that dramatic increase not only limits the utility of LaGuardia, because there is congestion there, but there is a ripple effect on the whole country. And so to the extent of flying into LaGuardia is open to everybody essentially on the same basis, we don't think about it as a limited resource. And we don't think through what are the

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ways to increase the efficiency of utilization, not to limit access, but to increase the efficiency of use, which means that you got to deal with time and space at the same time. You got to deal with different kinds of demographics and figure well, how do I incentivize, like Mike said, how do I incentivize equipment so that in fact we are using that runway capacity to the maximum extent possible. It's very hard to build runways its very hard, and so we can not be in a position to not use him as officially responsible. Same is true for air space. Well we have these people talk about well if somebody is not equipped just put them in a holding pattern. Where in fact after a while because of noise and other things you run out of places to put holding patterns and so not only is it expensive for the operator but its really expensive for the system, because of the way the fleet fly in and out of various areas. Thanks

QUESTIONER 2: Ron Hagerty of United Airlines. Charlie Keegan wanted to clarify a point you made. You said your plans for the OEP said 30 percent of

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increase in capacity. Was that over the lifespan to the 20-10 portion or for the rolling ten years?

PANELIST: Has to be 20-10.

QUESTIONER 2: Okay. Thank you.

QUESTIONER 3: I have a question. How would a large increase in general aviation affect the models and the approach we're looking at and that's really for all three analysts.

PANELIST: I'll take a shot. So our models right now would indicate that it depends. But in looking at the latest portable jet strategy for the eclipse, we need 2500 aircraft and not going to our major hubs. There is sufficient capacity to handle that extremely large numbers from a point-to-point type system, where the expectation is that it is general aviation. They fly point to point. They don't fly LaGuardia, they don't fly LaGuardia-Kennedy. They're flying in other areas. And in that regard we have plenty of capacity of Air Space resources that

support those spaces as well as runways to be able to deal with that. If however that strategy becomes a focal point leader to a hub network, anyway, then you have a much different problem. Then you utilize attempt to utilize the same air space. It's that much harder to us. Then we have issues of the atmospheric conditions, particularly the turbulence that we get. We got this huge, huge habit with the way the current system operates- which is pretty slow and nice structure.

QUESTIONER 3: What about the sector overloads potential with that if they're going to the outlier airports but still traveling through the heavily congested sectors?

PANELIST: Well sector, segregation sectors, can be designed when they don't deal with that. They don't find the same altitude. Very much the same way we handle our regional jets today. We separate not only laterally but also vertically. Where you separate into transition space to handle those things. It's not a big deal to actually cap those

activities particularly in the New York area. Number of sectors that are extremely low level. And they handle general aviation while supplying through the area. And we were just separating birthing if that becomes the case. Of course it does rub up against spectrum management and those kinds of things but we have yet to actually see that the end route congestion problem exists anywhere other than the external sides of the hubs. Other than what we have strange conditions, military readiness and those kinds of things- they we'll be able to deal with that.

Sector overload, when you talk point to point general aviation type system you have to overload consistently again a bump for an hour is not something that is intolerable. It's when you would want to run those 2500 in the same air space over the course of the morning. The way the strategy of the sales market has been from the eclipse. It's well distributed so that impact has yet to be actually realized, nor do we see that its actually going to happen.

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PANELIST 3: Just to add to that. Going back to Barry's point. So if we look at Teterboro today. Try to fly out of Teterboro in the middle of the afternoon. It is as busy an airport as busy a location as you can find. It's all small aircraft, business jets, essentially having diverted or chosen a different location to fly from instead of flying into LaGuardia. It could have flown into LaGuardia and Teterboro now provides a different set of options. The impact will depend upon how the traffic emerges. IF you try to blend all of it into the same streams, then it becomes extremely important to have the same level of capability. If it's to different streams then I think both in terms of the aerospace redesign as well as the air traffic control, you end up with a complicated network but not an interfering network.

QUESTIONER 2: I need to say though that Teterboro is an excellent example of a reliever airport, but given today's technology dysfunctions, we can't even use it to its maximum capabilities because it overlies the approach for Newark, which is

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equally as busy. So until we can improve the technology that I'd really liked the way you mentioned in your briefing. We can invent and we can invent. But we need to figure out what we can invent. Part of that needs to be more precision approaches. More of the precision instrument approaches that would relief those controllers interfering with Newark. It relieves La Guardia but constrains Newark. So that there are some technology issues we need and the tradeoff, by the way, isn't a good trade off. Newark and LaGuardia are equally important as is Teterboro. So we need to come up with a technology solution for that.

PANELIST 3: And in fact, that's why the solution, the solution space has procedures in it. Has the airspace component to it, and it has capabilities both in the aircraft and on the ground. That all have to come together in order to do that.

QUESTIONER 2: And were not using those to the maximum advantage today. Like it was mentioned in

the RTCA meeting today. Were not using the onboard capabilities yet to the extent that we should.

QUESTIONER 4: Let me ask one. Isn't an uneven rate of transition to some new system just a given. That between financing in the US and in between different levels of change outside the US, Different regions are going to adopt at different rates. Isn't uneven an uneven rate of transition just sort of a given for both the US and internationally. And how do you deal with that?

PANELIST 3: <inaudible>

QUESTIONER 4: How do you work a system where you have some aircraft that are say at a 1970's level and another aircraft at say a 20-10 level. And they all want to intermingle?

PANELIST: I have an idea. But it's not necessarily -- I have a fleet of almost 700 aircraft. And there's no way that I'd intentionally I intend to equip all those aircraft every possible capability in

this early day. I think some markets are so congested and so lucrative that I should be willing to pay whatever it takes to equip that aircraft to serve that ballplayers. In fact much of that capability is already in my aircraft. I can't use it because we have system that are not. We have communications that are not we have surveillance that is not. It's because I don't have the same system as Charlie, anybody has it. It is a mirror of the security issues for many systems for many dates but there not purged. They do not like this.

QUESTIONER 4: I guess let me do one more. I wrote down this question I decided not to ask it. But since you brought it up I'll ask it anyhow. How much of this is really for the panel? How much is a reflection of allocation of costs for airport usage? Which is if you change that in some way, then some of the problem will go away. Does that make sense?

PANELIST 2. Free market. And this is market definition by demand limiting. And the idea is that the past should be imbalanced. Environmental

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responsibility or some community responsibilities. This is a global national resource. Not everyone is going to be after that. Obviously the ideal situation for everyone is get up.

QUESTIONER: Just a comment that leads to another comment Charlie's chart on the current plans through 2010 that show that capacity increase occurs from each of the quadrants. I think one thing we need to point out. I think it's all very good and it's all supported by everyone, but if you were to lay another curve on top of that, it's the anticipated forecasted growth. It's above all those lines. We get 20-10 and going on 20-20. That line, the differential becomes even steeper. So, all that's necessary, but the growth is out pacing that capacity, though.

PANELIST: Actually our current forecast is that were outpacing it right now. So if we continue through 2013, were all in the same boat. Through 2010 our current forecast shows a 26% increase, in the growth. So, its probably somewhat conservative at this point and time but this is the first time that's

happened, And, I think if you look at the economic market, it is not coming back as we have seen the traffic rut come back since 1960. So 1960 we showed there is a quick upturn within the first 6 months, and then 18 months you have sort of a trend line recovery, and we have not seen that. So, although I believe our current forecast is somewhat conservative. I would hesitate to jump that we are not keeping pace, or will keep pace. The capacity growth is not a guess on our part it's a reasonable very conservative approach of how to address that guess. It leaves out some of the higher technology pieces that we are all investigating in favor of. That represent huge gains but we're not willing to stick our thumb-print on it. I really believe that we should aggressively pursue it .I don't want to give any impression that we've really fallen far behind.

PANELIST #3: See your point about it. The central issue about this problem is, I think, its being used as both the sword and the shield by many parts. The issue is where is the equipage goes from

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imperative to necessary to desirable to convenient to wonderful. I shall never derive benefit from this.

Absolutely and I really believe that that's the key. I mean if you focus, so the improvements will be focused on the markets by market basis. To the extent that the benefits accrue, the airline invests, the business jet people invest in order to get the benefit of the market. Where we run into problems is to say do it in all markets at the same time at the same space because then it becomes prohibitive. You just can't do it. So the key is to realize where the hotspots are, and to start attacking those as you go forward.

Isn't it a bit of a challenge that the equipage is an individual payment but a network advantage. And so a single equipper gets zero benefits. Everyone, or a majority, or a sizable chunk of equipping, there's a big network benefit; and you don't have incentives, either marketplace incentives, policy incentives, or whatever in place to try and get over that hump.

PANELIST 4: I agree I think leadership is the issue. And that's what I'm talking about an expression of leadership. How do we create the go forward basis to make this a desired law.

QUESTIONER 5: Herman Gates Office of Aviation Research FAA. I have a question for Mike Lewis in the commission. You look really at trying to provide in the long term an efficient operation door stop to destination reducing that time. You really need to talk about a multi modal transportation not just the aviation side of it, and, if you particularly looking at the north east quarter of this area. On the aviation solution alone isn't going to provide that for you. What way is the commission addressing sort of an integrative transportation which I think we really need to get to provide total transportation solutions versus sub-optimizing the aviation side of it.

PANELIST 1: The quick answer is its not looking at multimodal. The challenge of this commission is it's as wide as aerospace, aviation through space,

and as deep as today versus fifty years from now. And so, if there is no question of, or no lack of charter for the commission to try and articulate some studies and views. And so, getting multimodal outside of aerospace has not been in the main discussion other than folks have raised exactly what you're talking about. Its clearly an issue. There's been at least some response from an airport operator that said let me deal with that. Get the capacity- that's my job to provide the gates and provide the parking and so on and so forth at least from the airport ground side. If the aviation side can be improved. But clearly, the other multimodes from a transportation efficiency national productivity standpoint is part of the whole equation, as well. But the commission is not trying to tackle.

QUESTIONER: On that point, If I could. Much of this comes down to mostly how were going to pay for it. Before we get truly enamored with these multimodes in the northeast corridor. The northeast corridor hadn't used either. Between 7 and 15 billion dollars of backlog to turn maintenance hasn't been

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invested. This is not a cheap proposition integrating the transportation systems the flight ultimately pays for itself.

QUESTIONER 4: Yeah on the pay for itself note. I'll try one more time. In some ways what were talking about is, there is a scarce resource. Which is this ability to use air space. In some ways what they're talking about is how you increase the amount of that resource, through making it more productive using the technology or whatever. And the other side of that maybe we haven't talked about it but maybe we will at some point. When you think of scarce resources and how you allocate them. But there's a number of different ways you can allocate them. Some people think its best is when you get the user to pay or allocate cost through an auction, or something. Because then the people who are the most productive will bid the most and get it. So I think we've talked about maybe this project has pretty much focused on how you increase the scarce resource side. One thing we might need to think about is how do you allocate it maybe during this interim phase or other phase. I

say that in part because we had a meeting here yesterday on spectrum allocation, and that was one of the debates. It was Jim Schlesinger who chaired it. Is spectrum the same kind of thing. You've got this stuff, it's a public good, everybody benefits. How do you decide who gets to use it. And there's a couple. You can have a beauty contest, which is what the FCC used to do. Or you know you can make the government just pick or you can make people pay for it. And one of the things that we focused here on increased the supply side, we might also want to think about the allocate side.

QUESTIONER 6: Actually, its three dimensional. We have three resources at the same time to be consented and also make <inaudible> space spectrum.

PANELIST: The spectrum meeting was not positive. We had a lot of very good people. They're not positive about the leadership part. So finding ways to get something that substitutes for leadership, and money was the leading candidate.

MODERATOR: Three questions and we'll take a short break?

PANELIST: We'll go from right to left, if that's alright.

QUESTION 7: I'm John Gilrama, FDA liaison within the FAA ARS, ARS7, to be specific. Mr. Keagan hit on something. I've been to several FAA meetings in a lot of these issues. And a lot of the same issues and multi dimensional prospectus comes up in personally every meeting you go to. And I've heard about equipping aircraft to getting them where they need to go quicker, cheaper, more efficiently, and that's certainly good for the consumer and certainly good for the DoD and certainly good for the whole aviation community. But I haven't heard one dimension spoken to very in depth. You know we can race to the holding pattern. But if you said 12.7 % increase for traffic capability just by increasing the runways. Increasing the runway acceptance rate is what we can get them there. Because you talk to controllers and say we can work all kinds of ways to get them there

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but once we get them there what do with them. So you need the runways. Actually you need the concrete to put them down. You need to increase them right now. Follow up to that. How's your gates. Good perspective. The year 2000 I do a lot of traveling. In fact for the last three or four years about 2 weeks out of every month I was traveling. And I'll tell you what I got to places real quick and there was a pile came aboard say hey we got there 15, 20 minutes early great job, we went to the holding pattern. And we are there with 3 or 4 other airplanes because there was no gates for us. So that's one perspective that I haven't heard a lot discussed in the meetings. Aircraft equippage and yada yada all good. But what do you do once they get, there I can get there quick. What do I do with them once I get there. So that's an aspect I haven't heard much verbage on.

I know there are multi-lateration projects and so forth. And will perhaps give the airlines more management capability better management capability of there ground resources in case and so forth. But still you don 't hear very much talk about that. But

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I think if you got at least augmentary controls and beniform controls. If I got the concrete I can land people. And if I got a way to get them off the concrete quick that even better So increasing the number of runways and the runway acceptance rates. I think if you do that in itself, is going to put a pretty good foot forward.

PANELIST: Well just a comment. That is a true focus so each one of the things that the key is that increasing part of the rules on airplane at on the runway at a time. So, that represents somewhere between 65 and 85 seconds and what that spread is and depending on how much runway we have, you can do the math and see what we can actually do. We're really darn close to that we can run to the efficiency rates depending on the weather somewhere between 96 percent of the time. In doing that, everything else is in the margin so we have some technologies such as the Precision Runway monitor. Which help us run tools and help us to increase those arrival rates. And in a place like Minneapolis we go from 56 an hour to actually up to 60 so that is a significant number

over the time period when we think about passengers and goods. It is in bold. It is four. So, four out of the day is 24, which is 20 maybe then were already up schedule anyways So were addressing some of those. And service management peaks. There is really an tremendous amount of research that is going on particularly in the summer. On collaboration with NASA and actually FedEx and Tempest are doing a number of task projects to see how we can manage both resources. We actually do have and there certainly maybe more funding in the runway situation.

PANELIST: I think the issue is more multidimensional that we suggest. I think Charlie's issues are issues you can improve the layout center force again runway fester. You could quiet frankly not every pilot gets off the runway equally quickly as the next one does. And some companies tender the gulf inboard they feel safe with. I think another issue inside the gates which is totally a policy issues we generally in the United States have dedicated gates by airline. Not true in a lot of other countries in the world. It's the business

model that's evolved in the United States. So you may find airports where there are airplanes that's been telebox waiting for a gate. And there plenty of gates in the airport just not, there not the one leased by the airplane that you are on or the airline you can. And airlines also find it difficult to change gates at the last minute. You know there maybe a gate open. But it's not the one that is posted on the display board inside. And not all gates do. Some would accommodate a 737 and will not accommodate a 747.

MODERATOR: There were two more questions.

PANEIST: May I just make one comment. Gate information is a very good subject to be followed on. I would say though, that as an airline we plan our gates based on predictability. We can achieve predictability. The gate is not an issue. We're prepared to do what ever we can do for that. And it's not a factor as much as runway capacity as block to block predictability and that's where I think we need to refocus on some of the issues.

PANELIST: I sell door to door.

PANELIST: The problem is we're totally unlike Maryland. I have two customers on every transaction. They don't take the trip they don't appreciate the trip. All they care about is one damaged package but on time by someone whose smiling for the rest of us.

MODERATOR: Did you want to put this to bed before we chemicalize this.

PANELIST: This conversation boils down to how we are evolving the system. We're evolving the system in sync with the various business models that take place. From a customers business models, GA business models, and the airport business models as well as trying to pocket <inaudible>.

QUESTIONER 8: Howard Ailsworth from Aerospace Industries Association. Just in talking about pricing and racehorse utilization. I think an unstudied or unanswered question is to what effect do

current pricing mechanisms cause resource misallocation and so forth.

PANELIST 1: I can give you general answer on that. You wouldn't be surprised. That's part of the problem is that the pricing mechanisms and just to use the spectrum model, which will avoid annoying anyone. The model we use for allocation spectrum stems from 1920, 1930, 1950 or 1980. The air traffic situation is a little different but it's not entirely different so a better pricing discipline or better market discipline might be something that helps. And that would get to the point of while these guys increase the supply, we need to think about how is there a more efficient way to allocate what we have now.

The other point is about the pricing is that we need to think about pricing in a broader context. So pricing does not necessarily mean financial payment. It could mean lots of different things. You could distribute the available blocks of time. You could increase the level of required capability before your able to use a certain resource. You can incentivize

it differently so its not just a financial nextism that you basically impose it. Because LaGuardia, for example, you couldn't select a market clearing price for LaGuardia. There's a lot of people who pay a lot of money to go into LaGuardia, all the time.

PANELIST: We'll make this the last one, right?

MODERATOR: Perfect that's exactly what I was going to refer to on that Harris <inaudible> Secretary of Transportation. We actually have just reopened the docket on demand management. And it became quite evident to me that this is inextricably linked to our capacity discussions. You use the funnel example that was in Charlie's graph. Yes I think you can find a clearing price in LaGuardia at some point. But it's a question of whether we want to use that or not. It's also a question of whether you take the larger pipe through the funnel. If you take the bigger planes and you require a certain amount of planes and certain levels of seeding at certain times of day and that sort of thing we very much want to link these two discussions because their

very important and we think that we can increase capacity by managing demand in the proper way at not only LaGuardia but at many other congested airports across the country. And the only other one I want to say is on gates. We are actually are having many great discussions with many other airports thanks to the competition plan issue with gates at various airports. And bringing a lot of the proprietary use gates and single airline use gates into common use. Which doesn't harm anyone really and ends up making a much better use resource. So, managing resource managing the air space will all come together in the capacity argument to help at all. And I think boosts the percentages in the OEP.

Peter Drucker said that any job that defeats two or three men in succession is one that needs to be reckoned as unfit for human beings. Well that's the kind of situation we have here. We need to automate a bit more and lead a bit more you want it. And been around some of these personal leadership failures. I think we need some simpler definitions. Again as I mentioned earlier that equipage is used as a defensive tool because its not defined its not

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precise its not specific. It's amorphous, and in fact, frankly its almost desired in some quarters for that status to remain because its easy to resist. We could talk about how we can or can't do it , or only we shouldn't. That was in the details and that how we saw it.

Information systems are something to me is most troubling about its not the technology it's the information. We have these capabilities, but we do not have a hierarchy of command and control we don't have that in the present system or the future system to the level I think is really capable of developing. And, I think that the operators, both within the FAA, and both within the airlines, and the General Aviation. Additional aviation need to have the same hierarchy of visibility and that were not allowed to have the same or different set of facts. Must have had the same set of facts. We may have different opinions about the integrity. But we must have had the same visibility. The truth is, he needs to chair away or make the best availability of the crew resources when we talk about earlier. So that what this becomes is hopefully a seamless invisible

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service system. One that the service we're providing is the commerce needs of a traveling public. Frankly, our needs go way beyond enhance the convenience even if it's not business travel. I think we have families that are dispersed. We have requirements that didn't exist years ago. Because we have to be connected in ways didn't require years ago so that the service needs to focus on growth that's controllable and achievable. So that there's process experience getting a little larger than life. But then the process experience needs to be seen as valuable whether than draft person for a some sort of box own good. Because that value enhancement is the basis of the need for the resource. This has become a real business. The analogy that I used when you got a telephone system that's got a hundred subscribers it's a play thing of the rich. It's a hobby. And you can. A billion subscribers and you got yourself a real business. And it needs to be controlled. And so these economic games are unfortunate but they're necessary. It's part of managing solutions needing development of morals. So this problem we focused on is not about acquiring the

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next step, it is about establishing a means of growing to find out where are the choke points where are the details that need to be dealt with in the proper order so that we can continue to take advantage, I might say exploit the resources we have to the most reasonable extent. At some point or another some of us need to surrender our autonomy and some of our ranger goals in order to achieve the most important among us. That sounds kind of strange coming from a business person. We're lobbying all bank <inaudible> and its because the only player in the poll. This is an issue of globalism. In the years of early aviation certainly after World War II we had a dominance that we could export we did export. It no longer exists. Small countries can steal margins both technologically and operationally because they have no legs to deal with. Because they have the will to desire a larger player in the world, and the internet has show then that's possible. These are real issues. This isn't just some theory that lies somewhere else in the planet that doesn't really affect me, might not effect you but hey certainly will own you turnover when you choose to.

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But I think its difficulties lies where we are not. I subscribe fully to H.L Megan was my favorite munchkin, a reporter from the Baltimore Sun. He said there's always one simple wrong answer. No simple answers to problems. It's going to be hard and complex.

MODERATOR: Thank you. Carlos Beniaze of National Economic Council and where you handle labor pension and tax issues.

PANELIST: All sorts of issues.

MODERATOR: Yes.

PANELIST: Sounds really aviation. That's a long story.

MODERATOR: And you're an economist for former representative John Casey.

PANELIST 2: Thank you. Its sort of nice to hear about what were talking about dealing the air traffic man. Chapter 911. I wonder how long it would take to return to normalcy. And the technology issues not withstanding and they're great fun, I'm going to argue that the policy battles can be fought in two areas. One big what's it going to cost and who's

going to pay for it. The traditional model for giving the cost has been we ask the airlines for the flex money pass on back to their passengers and that's worth it accurately for along enough period of time. But the current focus on security may have well sucked all the oxygen out of that model. The cost of hiring 10's of 1000's makes 70,000 of new baggage claims in federal employees. Couple of billion dollars a year. Put another 10 dollars per ticket tax you have to figure that doesn't cover the cost of those 70,000 employees. I was hoping in here I would figure how I'd pay for them. Those EDS machines are close to 1 million dollars a piece. I think we just announced that were buying 11,000 of those. Add it do the math. It's not going to be a lot of room <?>. To buy this wonderful technology much less to implement it many of the airlines are stocking that the current fees structure is at its limits. The air transport association has done a nice job of laying out the fees and I think that the 300 dollar ticket now has passed your facility charges and ticket tax, and go to somewhere north of 20 % of the cost of that 300 dollar ticket. So, the

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current state of the airline financials has to be a part of this calculus. The first quarter losses to the large carriers running about half billion dollars after Vienna Well provisions and the stimulus package which was worth a few hundred million dollars to them. The following year where they lost 8 carriers. I think United and American lost 4 billion dollars last year That seven billion dollar industry loss is after a 5 billion dollar federal transfer. This is not an industry with a lot of disposable cash to pay for this. I mean try to talk in terms of the technology will give them better control of their airspace, will waste less time in the air we'll save money on it. That's true over a payback period. Right now this is just <> focusing only on cash flow payback period because they 're will wondering who's going to be here in 10 years. Look at the cost in flying passengers. Look at the insurance costs. Look at where this has been already another pressure for carriers. They used to pay 25 cents a passenger for insurance against all car rolls. That included about 2 cents a passenger for war on terrorism coverage. Right now, that cost has gone up to 1.25

with third party liability war on terrorism coverage, limited to 50 million dollars. If they have to back to the private market that another 1.85 per passenger. So I've gone from 25 cents a passenger to about 3.00 dollars a passenger. There not happy there not looking to buy more toys. There not looking to build infrastructure, they're just trying to survive, until hopefully the business traveler comes back and bails them out. Until he comes back or if he comes back there isn't any revenue front end to do the modernization. That's the only character he has right now that's the only model they have. That high player business pass has to come back Second Question isn't sort of a subsidiary question is who is going to run this. Included in the budget for Department of Transportation this year is a reference to the PBO, with a quote that, "If the PBO is not effective after a year of operation, the Department will look to other options including partial privatizations and franchise operations, proponents always a little resistant to the air tack system. Now orange will make announcements and I can repeat this . There is skepticism about how they

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manage technology improvements in the past. And this concern for civil privatization. And this is by no means new statements about not a lot about a life. Air transportation is a service. If you can't provide it If you can't do it well, we're going to have to investigate your options. And, that sort of goes to 2002, and were still waiting for modernization and told it's happened before. So I have that problem. I also have a problem in that I have a second monopoly out here. (It) isn't making me very comfortable. If you go to the controllers conventions and I don't know if anyone's from actress here today I hope John Carr is here, He's always engaging on this. If you go to the conventions I had the pleasure of sitting in the audience for one of these. Going to be and one of the company stood up and said I've had it. I spent 18 years in this organization. I devoted my life to it. I'm going to do my two years and I'm out of here. I can retire. And if they want me to stay, there going to really have to make it worth my while . You get a standing ovation Now I don't know whether you think you could organize a mass retirement stand outside the door and

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get ready to get brought in . Strike one version of that problem. And now I have to be worried about replacing controller of our organization. So I need redundancy the same way that the technology people will tell me. That we need redundancy in the management systems. I need redundancy in all of the systems but in the people side. I don't like being made exposed. So, the cost of the system the inability of the unit to pay for it . Whose take from back 8 billion dollar loss in the industry All of a sudden you have to look at this Morris as a technology problem. Levi and Amr acknowledged earlier in his presentation. So we have to decide not just what the best technology is, we also have to decide who's going to make the determininations of technology in terms of what's affordable to the people that are going to be using it. Whose going to be running that. And ultimately who has the final say on that process of delivering air traffic management services to his customers. Very different from the safety aspects. I don't think anybody wants to go near that program. But we do have a very fundamental question As long as we're redefining this

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whole issue, It's a valid question to ask. How do we deliver services. Thank you.

Moderator: Thank you. Our final speaker is John Aherst. He's Senior Vice President of Boeing Company and President of Air Traffic Management. That's great. Okay.

Panelist: I might ask you as what is an airplane manufacturer doing here. And or somebody whose generally known in airplane manufacturing. And fundamentally we're interested among US corporation we probably had as close to as much get in the game as anybody else. Last year we sold about 35 billion dollars worth of airplanes. About 70 % of them went outside the country. So we were the country's largest exporter. And had a significant effect as one company on a balance of payfers. We'd like to see that market continue to grow and the only way that its going to continue to grow in our view is that if there is adequate capacity to enable that. I think Charlie Keagan did as usual outstanding job of

describing the operational evolution plan of the FAA. We highlighted 16 items that are targeted for implementation in the next 24 months, roughly. Very important that we can take you down that path. We need all of the improvements that are envisioned among those 16 folks. Our concern is that the OEP by itself is clearly not enough. It's not enough to allow the number of people who want to fly today and, projected to fly what they want to in the next 20 years. To fly when they want to, where they want to, at an affordable price. So we think more needs to be done. The near term, the events of 9 /11 have also brought about some very significant concerns about adequate funding for increasing the infrastructure on the national aerospace system. As we have to place greater emphasis on security. Spend more vote cast your dollars on federal dollars on security insuring that our air transportation system remains secure. That's taken away from the funding that is available to continue to expend <past> the system. We think that the infrastructure issue is extremely important both in the near term and in the long term. People talked about, earlier speakers have talked about

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business travel not returning I suggest that infrastructure is part of that. It struck me in reading the Washington Post day before yesterday seeing an advertisement for Delta Airlines. Where they said if you just check in the shuttle by 5 minutes after the hour. And if you're not on the airplane at 30 minutes after the hour they're going to give you 20,000 frequent flyer miles. That's almost enough of the free round trip across the country. They're so concerned about the infrastructure having an inhibiting effect on business travel business travels traveling particularly for short distances. The fact that it might cause the people to as I said, Amber said, Drive their car, yell on the train. Do something. Not go. This is the kind of world limiter, that we don't think is in the nations best interest. It's not just patience It's not just people. The same issues in a slightly different form are important to shippers. Don's whole business is based upon reliability and predictability. That package is there by 10:30 in the morning or he doesn't give you 20,000 frequent flyer miles. He also gives you your money

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back or part of your money back for non-performance. The shipping, the impact of air cargo is almost significant as the impact on passenger <vans>. More than 40 percent of the value of goods shipped in the world today are shipped by air not volume. When we think about this issue we got to think Beyond just commercial aviation both passenger and cargo. We need to think about the military. We need to think about General Aviation. Representatives from the Pentagon will tell you that they operate about 14000 aircraft. All of those aircraft at least for some portion of their flight use the same fundamental airspace. And we cannot design a system they only meet the needs of a commercial airline job. General Aviation is changing. Charlie talked about often people think like general aviation is the private pilot flying the 172. Yes there a lot of us. But general aviation is changing. You're seeing new kinds of business jets. There going to place more demands on the system than ever before. So its important that we respond quickly and effectively, to increasing capacity. The debate that's been mentioned about doing it about pricing to us is

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almost the antithesis of the direction in which to go. If we were to the point where we had used all of available technology to make the maximum use of all of our resources, and we still had a promise, perhaps. But I don't think we are anywhere close to that point and time. We have yet to exploit all of the technology that's available. I think if you think about this, in terms of domestic environment, the US environment it is a very complex problem. And the complexity has increased particularly in the last year. With the help of the airline industry being significantly different than the previous year. With the new security issues but fundamentally we need to address an expansion of the capacity of our national air space. To provide more capacity, to enable economic growth. To enhance the safety of our operation. It's good environmental policy. Reduced noise, reduced emissions. One of the thing that strikes me in looking at all the CSIS logos, at least with the background in particular here. Is the I. I stands for international body if I remember correctly. When we think about CSIS one of the unique aspects which your studies I think help

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advanced considerably is the IRA. I often use the 777s are relatively successful US product. In the next 24 hours a the 777 will land in about 50 countries. We couldn't stand to have 50 different black boxes to accomplish every single function that an airplane needs to do to operator in 156 0very successfully and safely form point A to Point B. A 737 within the next 24 hours will land in 150 countries. So the issue is just magnified. Our long term vision the vision that we think we all need to address is to focus on seamless global operations. Charlie Keagan alluded to several types of international issues. I think he mentioned a couple of different technologies with respect to ADSB For the global aviation systems to operate efficiently and profitably will continue to grow needs web before seeked. I think there are opportunities towards trans Atlantic collaboration toward accommodating aviation infrastructure. We think that when you talking to key European leaders, that they have similar urgent needs to address the passage shortfalls. They have similar not identical but similar new security needs to address. They

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recognize the importance of global interoperability. It seems to me that one of the issues one of the fastest that needs to be addressed in this endeavor is how we can achieve a higher degree of global interoperability how we can engage more cooperatively particularly with the EU on operating much more seamlessly. The international community is not much different than the US community in many respects we all have to be a love, to reach a consensus on this as the requirements <>. We all need to address how the system will be financed. We have some new issues. We have some national security issues. That play beyond the borders of The US. When we talk about it particularly from the US perspective you know we think about the sovereignty issues. We think about data protection issues We think about export control issues particularly related to technology. And these are also issues that need to be solved to move much further towards this seamless global operation. At the risk of repeating what several previous figure have said. I 'd like to end by emphasizing a couple of points. One is this is not a technology issue. The technology exists with modest amount of

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development activity. Very Modest. This is an issue for which the solution will be, determinate by leadership and policy. And that's clearly where we view the effort needs to be focused immediately. And I don't know how many of you work for private companies Lot of organizations have blue shirts and all that. And if you were to get a United Airlines 1 which is 15 years old. Big 92 in the front or in the back. Would say fly the friendly skies. Or Americans would say we'd have an eagle on the front and it would say across the back something special in the air and I'm sure they all got to have similar ones. Well Boeing air traffic management has one on the back cross <> it says find a way. I think what we all need to do is to find a way to address this pressing issues successfully and not focused so much on finding an excuse why we cant.

Moderator: Thank you very much. We're never really out of time. I think we could go over for a few minutes for discussion if that's alright with anyone. If anyone feels the need to leave. Please feel free.

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But does anyone have a question that they want to? Why, I can start us off. This is really for any of the free panelists but addressing the question Mr. Aherst raised about international. Do you think that the current structures that we have to coordinate and standardize and create the sort of seamless global operations. Do you think the international structures that we have in place was sufficient and we just need to do more work and have more leadership or do you think that there is a fundamentally different approach we need to take in arranging at. Sort of a big ugly question ,I guess but procedural.

Panelist: Informational structures are inherently slow and cumbersome. From long term solutions we could give yourself enough lead time they'll be fine they don't work very well pricing.

Panelist: I think I wouldn't address this too much That Carlos is exactly right. The international standards organization so to speak for aviation is IKO International Stands specifically the Aviation

organization it's a United Nations Agency and it operates like the United Nations. And it's a slow progress consensus building approach that causes many advancements to take much longer than an organization didn't rely so much on leverage, and so that's a structure that has provided many valuable addition to aviation. But perhaps I think needs are changing I think notwithstanding IKO just look at the US and European Union together our two economies generate about 60-70 percent of the world's air travel. And even if they're are difficulties related to IKO because they satisfied the needs of every country in the third world. That's not the case between the US and Europe. And, I think we should be focused on trying to work stronger relationships. And I really believe that there is as much interest in Europe in addressing these issues as there is in the United States.

It strikes me that the international finance exchange system agencies works rather well. And it has in fact created some of the difficulties move at the speed of light. Perhaps the hierarchies means of fulfillment

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fastens it Perhaps model, look abbreviation. Needs to be some operational focus for those who instruct me to be responsible for the outcomes make it so. It needs to operate within a policy framework. It has urgency, so I'm saying the structure may not really exist. Because we had the luxury often isolated. Crystal valley -- we ran. Let me ask a question now I what to ask one that sort has been bothering me. All the speakers have touched on this we've all that said that one of the urgent need is the need for leadership. So maybe we could get peoples thoughts and this includes the previous panel and also the current one You know where is that leadership going to come from which sort of leadership do you need and when we try say leadership and when we say leadership in one do we mean the White House.

Panelist: It's going to be that much harder to get the White House to focus to any specific issue. It is going to be more security. The economy is bouncing back that's helping because of the primacy of those issues right now it's happened that much harder to focus on the issues I don't want to

degenerate the importance of this to second tier issues. Its just that much more difficult to break through. Its even difficult to break through the news cycle basis imagine what its like with policy basis.

Panelist #2: But I'd submit to you Carlos the aviations growth is highly dependent upon the security of the system operating that's the same thing and the computer system doesn't have to make this a second tier issue its just another aspect of the security of US economy operating efficiently. And it is a very important factor in that security. One more observation beyond serenity and that is to go back to your specific question Jim, and that is the White House impetus will certainly go a long way to bring a divers set of stakeholders even the diverse set stakeholders inside the government together. I think they're similar s given an impetus on the other side of the Atlantic in the European Commission. Certainly the commission responsible for transporting has been is demonstrating a high degree of leadership.

I agree with you. I think that there's a way to achieve most of these goals at the same time I don't tweak screens. I think the in the critical point of US. Security isn't something attained if it ever was. It's a bear. In there is so much intelligence available so many people great origin.

Panelist: The questions come about on leadership and that implies that we're looking for a single focal leader, a white night, or the White House or whatever it might be. I would just posit that discussions like this are part of the leadership. And, the effort that Mike Lewis is leading with the commissioned or the Amr. This is an underbrush clearing exercise that is tremendously important. That when the White House gets focused or the Department of Transportation gets focused. The trees are fewer that needed to be cleared.

I was going to ask both Mike and Amr and see if they wanted to anything to this, Maybe Amr.

I'd just like to echo what David said and make it to a couple of things that Both John and Don said. That is that the leadership on such complicated I mean this is such an enormously complicated topic. Extremely complicated. It is extremely difficult to get political leadership with such complicated topics because they end up being so incredibly difficult to do.

I can't summarize in a one page set of talking points.

Yeah, its kind of hard, but when one do send it to me. But I think the opportunity comes from being specific and being willing to act in concert. And I think this is the benefit of number one being very clear as to what needs to be. If we could say this is what needs to be done and we can get agreement from all parties. Then the political will emerges and the support emerges very clearly. I think when it runs up into to trouble where it ends up being a very diverse set of opinions and so it's very easy for the various systems and the beaureaucracy and the

politics to say the hell they don't now where they want to go so forget it. No need to worry about that problem. So I think the opportunity comes from picking a set of specific things to do specific things to do, specific things to rally around, that may, in fact, not benefit everyone instantaneously, but will benefit some segment in a critical way that would allow us to build on our support. So my formula basically says the White House and the Department of Transportation said nothing about the preflight we didn't. I went preflight we didn't invent the program it all came from the unity of the community basically saying this is what we need and this is how were going to do it and by God we got the political support, we got the White House support and we got the Congressional support and the money came, and I think we need to replicate that over and over and over many times. Not in a single big bang massive project but in probably in 5 or 10 or 15 initiatives that matter but really have the support and can provide for a focused agenda.

Few thoughts- one it strikes me that there is an opportunity potentially in expressing a goal and a national need I'll try to talk about the idea of mobility it covers. It's not just let's help the aviation industry and kind of get healthier. There's a national need for the economy how well our military can perform its mission and well as the quality of life of the citizenry that is perhaps more articulate able from the senior leadership than special interests lets help the aviation industry because they're losing money and so forth and that is my strong opinion it's absolutely true its not trying to fluff it up and so forth. Its in fact the underlying thing that the national and world economy and so forth can benefit from. Second thing is it' s not necessary to fully design the systems. The system is very complex no one even knows how it works to day. And no single person in the nation does work. Perhaps facing this challenge can be daunting if you try to tie every lose end together. Maybe there's an opportunity to think about it laying the groundwork. Intelligently building the infrastructure and letting what's ever on top of it happen with the business

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there's models that can exploit it happens the best you don't have to design every last bit of the operation. In order for those business models to lay on top of an architecture or infrastructure and exploit them incentives the financial incentives, payback have to be in place and right now the financial incentives are not so much in place and for benefits time to accrue to those who tried to do innovative things and who try to move ahead. And, so some thinking about the policy and rules, frameworks for folks or local communities and farmers or smaller groups as opposed to the whole system begin to taking a lock step together. To achieve the real payback, better services financial or some sort of break. Maybe it's a powerful way to do it. It also strikes me in thinking that forces are way more powerful than widgets. So putting the right forces in play is a way the wonder of a capitalistic society do what it has to do to exploit all that. You don't have to design all the widgets so on and so forth but a couple few magic force- the internet wasn't designed today to knowing how everyone's going to work it. You go blossom and so forth. And it was

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just kind of this protocol that kind of made things it work and people jumped in it to exploit it to their hearts content and I think that there is some similarities in building a smart set of processes a few solid processes and a smart infrastructure. And then not worry about how the world exploits it but just let it happen.

I have a question. In the program I want to bring us a lot of good philosophizing going on but bringing it down to earth a little bit on those 16 points that we saw this morning and the other programs we have spoken to is there an order of the priority of those programs that will benefit for the dollar for the using. There is a priority.

I'm a venture analyst on the commission our bill is some thing both cost money and John Haring talked about the motivation back in the mid 50s one of our in fact our single enemy threw something into space that created a whole lot of discussion similar to what was happening around this table and we had a president who said lets go to the moon. And I would

suggest that 911 is a similar event to a Sputnik and if we were meeting to figure out.

Seems to me based on the technology that's for the most parts available and economic impact and security impact that we need to build on that and a president who would be a national leader make the moon speech or provide that leadership.

Okay. Maybe we can do one wrap up. Is that? Not really a wrap up, that won't be a wrap up.

I'm a member of workgroups I participate on that involve capacity increases and if it weren't for the brains in the box here I wouldn't know where to go tomorrow. But the issue remains that there's a lot of very bright people working on capacity initiatives for various venues. That I sometimes wonder what is the focal point. Where do we bring everything together Mike Lewis you captured something earlier. Where lets not worry about the technical how to but put an infrastructure in place to let us capture the economic benefit of the various industries. I would

say that's where leadership could start. If we could look at a single focal point at a higher level where all these benefits and plans come together and then let the market forces come to bear. I'm not denigrating any of the committees that I participate on or don't participate on. I'm just saying that there are a lot of plans out there that are going on that are very good. How do we focus that would be the beginning of leadership. If we could say that here is the overlying governing committee that says lets go here with all kinds of disciplines represented not just aviation.

This was a good first session we were a little worried about it. I think it turned out to be a really good first session. We are going to have others. We did invite the air traffic controllers NACA to this and they couldn't make it. So well work on it the next time. And I think the next session we have will be more on the international level and probably involve a fair number of European participants so we'll let you know when that is

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scheduled for. Hopefully we can pick up the same teams and get their European perspective on it.

What is the outcome of this series, I know you mentioned the report later in the fall. What happens to what we've all talked about.

Well, do you mean are we going to have a transcript.

Well what actions occur as a result of anything were talking about here do they go anywhere

I mean it would be much fun if they didn't. I think part of what were trying to do is focus on the executive branch side in particular. And think of are there things that we could point out That would help move people towards this leadership goal that people have articulated Sometimes you have to set out a roadmap and if we can do a roadmap that will help people think about where to go and that would be a good thing. Sometimes you might want to lead to a big session at the end where you could get some. We have Norman Mineta coming to a later session. That

might be a good thing to get someone to think about
this moon shot approach. I don't know if I like that
metaphor entirely but it's a good one to start with.
Thanks.