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REMARKS BY ALAN S. BOYD, SECRETARY OF TRANSPORTATION, PREPARED FOR DELIVERY AT THE GOVERNMENT-INDUSTRY DINNER OF THE ELECTRONIC INDUSTRIES ASSOCIATION, AT THE STATLER HILTON HOTEL, WASHINGTON, D.C., WEDNESDAY EVENING, MARCH 6, 1968.

I must confess I was puzzled at first by the invitation to speak tonight. It seemed more a job for Defense than Transportation. Finally, I realized what had happened -- Mr. McNamara has resigned and Mr. Clifford wasn't accepting speaking invitations yet.

But I am glad to worked out this way. It gives me a chance to remind you that the Defense Department isn't the only government agency interested in the black boxes you people produce -- not by a long shot.

There was a time when we sent out ships and never heard from them until, if they were fortunate, they returned to port.

There was a time when aviators were indeed "lone eagles."

There was a time when motor vehicle traffic was so sparse that there was no need for congestion control devices. But those days are gone forever.

Transportation's dependence on communications -- usually electronic communications -- grows every day.

I should begin, I suppose, with a word about the Department. When you held your last Electronic Industries Association Government-Industry dinner here a year ago, there was no such thing as a United States Department of Transportation. We will not celebrate our first birthday until next month.

I don't know just what sort of birthday celebration we're going to have. There are already some people who can't wait to wish us many happy returns -- as long as happy returns mean we will go back where we came from.

But we believe we have made some progress toward our primary goal -- an effort to coordinate the transportation policy of the United States government.

The Department of Transportation is much more than a collection of Federal transportation organizations -- the Federal Aviation Administration, the Federal Highway Administration, the Federal Railroad Administration, the Coast Guard, the Saint Lawrence Seaway Development Corporation, and the National Transportation Safety Board . . . although it is that, too.

Actually, our Department represents the first national commitment to forming a total system that will move people and goods safely, swiftly and economically from one place to another.

In a sense, what we're trying to do is help the nation break some old habits -- especially the habit of thinking of transportation too much in terms of vehicles and too little in terms of getting people or things from one place to another. The transportation industry is a service industry.

To the individual traveler or the individual shipper, the question of whether he uses a car or a truck or a bus or train or ship is far less important than the question of how whatever he chooses will serve him.

We might also include a telephone or a radio in that list of vehicles, if you're willing -- as I am -- to think of communications as being essentially the transportation of information.

Despite our youth, we in the Department have learned rather quickly some of the ways of getting along in Washington. We've learned how to meet people by saying: "How do you do. Will you help us?"

I propose tonight, therefore, to call upon the electronics industry to help us solve some transportation problems.

Electronics and telecommunications can do two important things for transportation. They can facilitate transportation in a variety of ways, and they can become in some situations a substitute for transportation as we usually think of it -- a substitute for the physical movement of some people and some things.

We're already utilizing the substitution idea in our daily living.

When your wife telephones a store to see if it has an item in stock, or to place an order, she is substituting telecommunications for transportation. She saves a trip, and we have one less automobile on the road to worry about.

We might eliminate the rush-hour problem in a city such as Washington if we carried the substitution idea far enough.

Every office worker would have at his home a picture telephone; a few sets of buttons to connect him with the office equipment; a special screen for viewing documents at faraway libraries and information centers, and a facsimile machine to reproduce those documents he'd like to keep. There would be no need to go to the office.

Of course, it might mean putting a vending machine in every block so they would have some place to go for a coffee break, and I think I really find the idea more intriguing than appealing.

Someone has said that one of the great drawbacks of the American Presidency is the fact that the occupant of that office is expected to work at home.

It will be a long time before every suburban home includes a fully equipped, executive-type communications terminal. But electronic substitutes for transportation can help us solve some of the problems of highway, railway and airway crowding.

It is interesting to speculate about what percentage of our transportation resources is devoted to moving the paper which we use in business and private life. I was told recently that the Post Office Department alone operates some 55,000 vehicles. The electronic potential for helping us avoid being burried alive in self-addressed return envelopes is great. And I also see some human value in allowing the weary businessman to use electronic substitutes to avoid a grueling trip to attend a one-hour conference.

We learned long ago what electronics can do to help facilitate transportation. Imagine where we would be if there were no traffic lights.

At the same time, however, I believe the transportation business has been slow to take advantage of much of the technology which the electronics industry has to offer. This is more our fault than yours.

Too often, we failed to systematize our effort and assign priorities.

In a word, we didn't tell you what we needed. In that context, I'd like to describe for you some of the planning that has been going on recently in the Federal Highway Administration.

The traffic light I mentioned is a major element in highway safety and traffic control, but when you measure it against other electronic equipment of today, it is a very primitive device.

We are quite aware that the electronics industry can make many new and far more sophisticated contributions to safety and efficiency on our highways. One problem has been that we have approached our needs on a piecemeal basis.

We've asked for a device or an idea to solve one little problem over here or another little problem over there when what we really needed to do was look at the entire system, and assign priorities, and fit our capabilities to a cohesive whole.

Our approach has been fragmented. But we are determined to put an end to that. We have resolved to start looking at the problems of transportation and telecommunications as systems problems.

In the Federal Highway Administration, we are now beginning to identify basic research and development requirements. For example, one of our basic requirements is the development of a system or a set of devices which will allow communications with individual drivers.

This system will provide route guidance, information on traffic conditions and other motorist aids. How can we best tell the driver of an automobile which way he needs to turn to reach his destination most efficiently? And how can we do so at the lowest possible cost consistent with public safety?

Once we identify a requirement, and once we assign a priority to the requirement, all kinds of ideas will come to mind. You in the electronics industry will provide a list of possible answers. We in the Department of Transportation will be able to assess your proposals within the framework of a functioning system.

Under a heading such as route guidance, we might include several subsidiary requirements -- the ability to communicate information to the driver (for example, through an announcement over his radio speaker); the ability to measure traffic and compare alternative routes automatically; the ability to take account, automatically, of special conditions such as fog or accidents.

Automated, electronic route guidance systems may not be too far in the future. Some of the elements of such a system can be placed rapidly into our existing highway environment.

At the same time, we need to be planning for the future -- not just by letting our imaginations run wild, but with a constant awareness that the systems which we devise, for the most part, will have to be compatible with the highways we've already built. Otherwise, those systems will be of no real value.

It's exciting to talk about installing an automatic pilot in the family car.

It's exciting to talk about the potential for linear induction motors as power units for commuter trains.

It's exciting to talk about the possibility of equipping our cities with little cars that would speed passengers from place to place on electrified roadways, never colliding and never encountering traffic jams.

We -- or rather, you -- have the technology to build such things. Robert A. Charpie, President of the Electronics Division of Union Carbide, said recently, "With the proper environment, we can haul off and invent and design anything we want."

The key word, of course, is environment and a substantial part of that environment is financial. Not every state is able even now to afford enough of the old-fashioned, non-electric highway mileage it needs. And so when we ask for new inventions and designs, we are talking -- for the present at least -- about ways to use more efficiently the roadways we already have, not about ways to replace them. Where streets and highways are concerned, maximum utilization is a basic requirement. We need your ideas about how to achieve that.

We recognize in the Department of Transportation that, as businessmen, you cannot justify the continual designing and redesigning of systems and devices that may or may not sell; that may or may not fit the schemes of the highway planners. It is up to us in government -- in Washington, in the states and in the cities -- to set standards and define goals -- to tell you what we need.

Anyone who sets out to talk about the relationship between electronics and transportation does so at the risk of sounding like a page out of a science fiction magazine. The capabilities of the electronics industry have progressed so far during the last few years that "I'll grant you the risk isn't as great as it once was.

Yet it hasn't disappeared, either.

In the Department of Transportation, we are reminded every day that not every problem can be solved with technology. Even problems that are caused by technology can't always be solved by technicians.

Congestion of the radio frequency spectrum is a good example.

One of the areas we chose for intensive study when the Department was formed was communication -- and for good reason. The only thing more essential to a smoothly-operated transportation system is the wheel.

As often as not, if you have good communication you don't have to move. And if you don't have good communications, you can't move anyway. It is essential to police work, to fire departments, to taxicabs, ambulances and emergency highway service.

It is the heart of air traffic control. And it will become even more important as we develop high-speed trains and move toward direct communication with the motorists on the highway.

It didn't take us long to realize that it is foolish to speculate about new ways to use the radio spectrum -- and particularly the land-mobile bands -- when the old ways we use it have already jammed parts of it beyond capacity in some geographical areas.

In large urban areas, the land-mobile bands are so polluted and there has been compulsory frequency sharing for so long that a service that once promised much is increasingly hard-pressed to deliver anything.

In New York City, for example, in the business service band an average of 47 licensees with a total of more than 400 mobile units are trying to use each radio channel.

In a new effort to deal with the problem, the Federal Communications Commission last month doubled the number of assignable channels in the 450-to-470 megahertz band. It has helped.

But the fantastic growth of land-mobile radio makes it obvious that these newly opened channels will be snapped up fast. In 1950, there were about 180,000 land-mobile radio transmitters in the United States. By June of last year there were about 2.5 million. And that doesn't include the millions of units that operate on citizen band. The most conservative estimates forecast even more specular growth of that demand in the future.

There have been many suggestions for dealing with the problem. And it shouldn't surprise you that our study has produced one more -- an idea I'd like to outline for you tonight.

At the outset, you find a feast-and-famine situation confronting land-mobile users. There is, at the same time, both congestion and total silence. In the Los Angeles area, for example, 40 percent of the spectrum space which would support land-mobile service lies fallow. That is true in some degree or another in other large cities.

The reason is that parts of the spectrum are allocated for future use largely by television and to some extent by government agencies and others. As a result, there is no provision for interim use of these channels by others.

The sitting aside of channels is both proper and necessary -- especially in view of predicted demand in the future. But the first question my staff raised in its investigation was whether reservation for future use of one service must automatically foreclose present use by another. Is there not some middle-ground? Is there -- they asked -- no way to open these channels to use now and still make sure they are available when they are needed in the future?

The Federal Communications Commission has experimented with the same notion. It has granted waivers of primary allocations to meet policy and public-safety requirements. In New York City, the police were given permission to use certain frequencies generally reserved for forestry purposes on the sound premise that timber is not a major industry in Manhattan.

But so far, there has been only one attempt to open such channels for commercial use -- and it didn't work.

A few years ago, the FCC authorized secondary use in California on an experimental basis, but there were few takers. And for good reason. There is a real element of risk in utilizing spectrum on a secondary, or sufferance, basis. It can be taken away any time the primary claimant decides he needs it.

It is small wonder that you find few people willing to invest in equipment or sign contracts that obligate them to provide a service under those circumstances. And it is this element of uncertainty that has so far blocked efforts to solve the problem.



Should secondary use be permitted throughout the country, we think we have a plan that would eliminate that risk and still protect the rights of the primary user.

The key to the plan is the fact that the user doesn't really care what frequency he has so long as his calls are getting through at reasonable cost. That being the case, it seems to us the answer is a pool of all unused frequencies.

A subscriber would sign up, not for a particular frequency, but for a service. If a primary user claimed the frequency the subscriber happened to be using at the time, he would simply be shifted to another frequency.

There are several ways this could be accomplished.

One approach would be to form companies that would lease radio equipment. In any given geographic area, a leasing company would ascertain which frequencies remained unused.

If a taxi operator decided to use radio service, he would call a leasing company and the equipment would be installed and tuned to an unused channel.

Of course, the secondary user could be permitted to own his own equipment. In some instances he might find that more desirable than leasing.

If a principal assignee for the frequency should exercise his right to the frequency, the leasing company would simply select another unused frequency for its client. An equipment modification or perhaps an actual exchange of equipment might be required. But in most instances, the interruption of service for the user would be brief and virtually painless.

The engineers tell me that one unused television channel would support 240 mobile radio channels. While that channel remains unused for television, why can't it be devoted to another worthwhile use?

The system would require cooperative arrangements among leasing companies in various geographic areas, so that equipment no longer suited for secondary use in one area could be traded off to an area where it would be usable. This of course, will challenge you as manufacturers to design and build equipment with this sort of flexibility in mind; both as to type of use and geographic location. Ultimately, the system would require significant improvement of our record-keeping on frequency usage; but the system could be started with the records which already exist.

To cover all of the broad spectrum range I mentioned, new land-mobile equipment would have to be designed and built. This would take time.

But what of right now?

Let's use Los Angeles, again, as an example. The frequency management people in the Federal Aviation Administration tell me that in the Los Angeles area, at least 450 channels for which shelf hardware is immediately available are lying dormant today.

Minor modifications of existing hardware could make another 300 quiet channels usable within six months. So, in less than a year, there could be a 40 percent increase in land - mobile communications capability in that city which is cited by many as having the most critical frequency shortage. In time, that capability might be increased more than eight-fold.

The beauty of the secondary-user plan is that it would permit the use of a valuable resource to the fuller advantage of everyone without disturbing the existing primary-allocation formulas in any way. It would provide immediate relief. It would permit revision of the basic primary-allocation system if, at a later time, that should become feasible.

We do not offer this as a permanent solution to the land-mobile problem. The experience of the transportation industry is that it's hard to find permanent solutions to anything. But we think it would serve until something better could be devised. The frequency spectrum is an unusual resource. It is limited in one sense, but it is valuable only when it is utilized. You don't wear out a frequency assignment by using it.

Every day, transportation's dependence on communications -- usually electronic communications -- grows larger. Not only does transportation need communications to do the job of transporting people and material more effectively and with greater safety. Transportation needs communications also as a reasonable alternative.

Traffic jams in communications will contribute to traffic jams in transportation -- and visa versa. Solutions must be found for both.

We will do what we can about our part. We look forward to working with you on yours.

Thank you.

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