

Building a National Transportation Library and Data Archive in the United States

Paper submitted by the Bureau of Transportation Statistics, US Department of Transportation¹

Brief Summary

The Internet is changing the way that the United States Department of Transportation thinks about transportation information. A pilot project at the Bureau of Transportation Statistics (BTS) has suggested that it may be practicable to establish a dispersed national network of transportation libraries and databases. Under the BTS model, electronic libraries and databases would be maintained by local agencies. These local libraries would be tied together via the Internet. Information access tools would be developed nationally and distributed to local agencies to ensure data comparability and systems interoperability. This paper outlines the BTS model, describes the context within which the model was developed, and explores some of the implications of full implementation.

I. Transportation information and data within the context of the US political and administrative structure

1. Transportation decisionmaking in the United States is highly decentralized. Most decisions about where, when, and how to construct transportation facilities are made by elected officials within state and local governments. These same officials and staff also have direct responsibility of operating and improving transportation system. Local professional staffs who compile data and prepare reports that describe local conditions support these local elected officials and local needs. To give you a rough sense of how decentralized the system is:

2. There are more than 50 state departments of transportation (there are 50 states in the United States, but the local departments of transportation in US protectorates such as Puerto Rico and Guam have the same administrative status as the other 50 jurisdictions). Local law, administrative controls, and customs determine the span of authority for each of these agencies. Each of state agency may employ thousands of staff with responsibility for developing and maintaining administrative records, conducting surveys on a wide range of topic, analyzing data, and reporting on the their finds. In addition to the 50 state level agencies, there are a huge number of metropolitan and city-level

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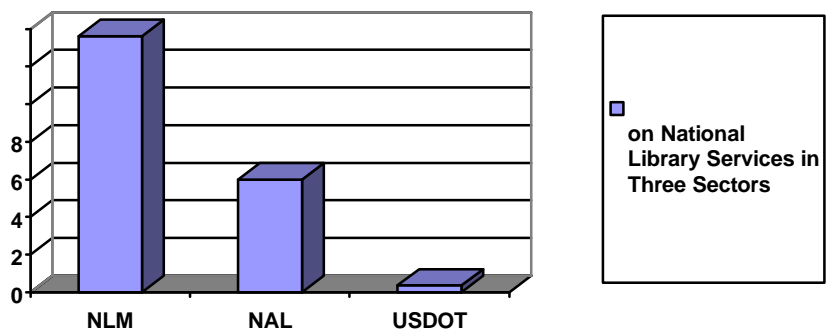
transportation agencies that have similar responsibilities. In the larger metropolitan areas, the sub-state agencies can be fairly large with staffs of about 100 planners, statisticians, survey methodologists, etc. There are about 300 sub-state transportation agencies in the US – most are small with staffs of fewer than 10 or 20. In addition to the state and local planning agencies there are about 3,000 local public transit agencies responsible for planning and operating public transportation systems such as subways, and bus service. Beyond the 3500 agencies we have already listed there are Port Authorities responsible for maintenance of our harbors and airports. There are also numerous federal, state and local agencies that deal with transportation statistics in one way or another – such as the Environmental Protection Agencies, and federal and state Departments of Energy.

3. The fragmentation of the data development, maintenance and reporting system has been compounded by a mode bias in the structure of the federal Department of Transportation. The Department was created in 1967 as a consolidation exercise designed to realize administrative efficiencies. However, the various agencies that were placed under the umbrella of the 1967 Department had long histories of their own and brought strong organizational cultures focused narrowly on the missions they were originally charged with performing. The Federal Aviation Administration, for example, has historically been concerned (appropriately enough) with what happens in the air, and not with how air travelers get to and from the airport.

4. The result of this decentralized decision system has been that rich stores of local data have been developed over the years. However, these stores have remained scattered across jurisdictions. They have never been

II. Transportation information storage and retrieve compared to two comparable sectors of the US economy

5. Compared to other sectors of the economy, transportation’s level of effort is miniscule. The National Library of Medicine spends \$151m/yr to organize the literature produced by the medical sector – that’s about \$13.30 per person employed in the sector. The National Agricultural Library spends \$18m/yr to organize agricultural research – about \$6.00 per person employed in the sector. DOT currently spends only about \$3m/yr for services to organize transportation materials – less than 40 cents per person employed in the sector.



6. The consequences of transportation’s neglect of its information infrastructure are clear. The federal Department of Transportation has no central repository for its reports. No single office within the federal department even tracks how many official reports are produced. Anecdotal evidence from transportation librarians across the country suggests that 50% of all requests for DOT reports are unfilled either because the reports cannot be found or are out of print.

7. The problem extends beyond the federal agency and federal information. A recent Pennsylvania State University study concluded that in most disciplines university librarians could get

90% of all articles and books requested by their customers. However, when the subject being researched is transportation, the success rate for capturing requested documents drops to 60%. Documents related to Intelligent Transportation Systems, for example, are extremely difficult to find.

8. The bottom line is that transportation research in the United States has become increasingly difficult, time-consuming, and expensive. The U.S. transportation industry is increasingly at a disadvantage with foreign competitors because the U.S. has no effective program to capture, catalog, or translate foreign transportation research. It is so difficult to do basic research that planners often “reinvent the wheel” because it’s easier than trying to get research reports from DOT, state, or local transportation agencies.

9. The NTL has become a popular program because it addresses a clear need – transportation planners and researchers simply do not have adequate access to the materials they need to manage the nation’s transportation systems. They were routinely make decisions without access to information already produced by federal, state, and local governments. The NTL has started to meet some of those needs by establishing a comprehensive online repository of documents from federal, state and local transportation agencies. However, the Bureau’s current library and other efforts at DOT provide only a fraction of the information services needed within the transportation sector.

III. The BTS Model

10. The BTS pilot project began with a fairly modest goal – collect the materials produced within the US Department of Transportation that would be useful to state and local planners and make those materials available on CD-ROM. However, conversations with transportation planners around the country quickly revealed that planners needed better access to materials produced in other states and other cities. Planners noted that materials from the federal government are often too policy-oriented, too general, or too abstract to be of practical use.

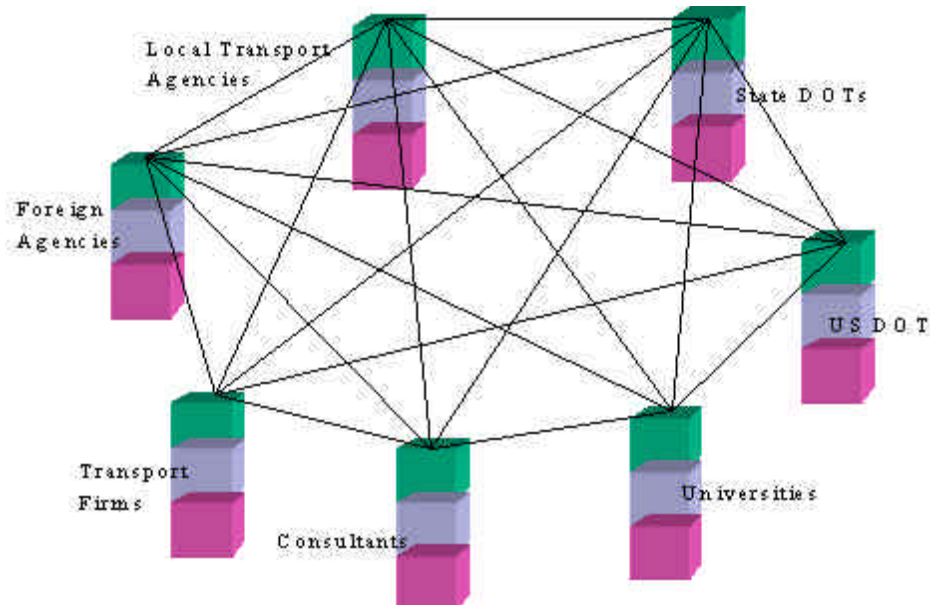
11. Once it became apparent that practitioners needed materials from all levels of government and not just from the federal transportation agency, BTS set out to systematically collect electronic copies of documents – methodology reports study designs, and planning documents produced by local agencies.

12. Since 1994, the Bureau of Transportation Statistics (BTS), the Federal Highway Administration, the Federal Transit Administration, and transportation planners from departments of transportation and metropolitan planning organizations around the country, have collected and organized information in an online “National Transportation Library.” BTS has stored the information from around the country on CD-ROMs and has made it available on the Internet. The idea behind the SMART Project to start gathering the collective wisdom of the transportation planning community, to make the materials generated by MPOs and DOTs easy to use and easy to share. The project offers transportation planners the opportunity to present their best work to others in the field.

13. During the first year of the NTL project, planners from nearly every state identified and contributed a wide range of materials such as reference documents, video clips, software packages, travel models, dissertations, surveys, and data sets. The project’s first CD offered video segments that describe the requirements of the ISTEA legislation and several organizations' responses to those requirements. If the prototype proves useful, BTS will continue to produce and maintain a more extensive CD and Internet library for transportation planners.

14. As the project has evolved, it has become increasingly clear that what is need is a national network of electronic transportation libraries and data archives modeled roughly on the National Library of Medicine’s network. The feasibility of building such a network has increased dramatically as local agencies, universities, and federal office have all began to set up internet servers. Lines between boxes on the chart below represent the Internet. Each of the three boxes in the columns of

boxes represents a level of information on the Internet. The top box represents a mere presence – the existence of a homepage. Often these homepages are sparse on content, but their establishment is an absolutely essential first step. The bottom box in each column represents the vast stores of information produced by each organization. Often these stores are in non-electronic or inaccessible formats, but this is where the knowledge of the organization resides. The middle box represents the level at which the NTL must focus its attention – the level through which analog material must pass to become available on the web. We are focusing our attention on defining the services that constitute reasonable, necessary, and sufficient, “information migration services.”



15. The NTL pilot currently provides access to more than 6,000 full-text documents on transportation planning, including documents from more than 30 State DOT and University web sites. About 10,000 visitors a month receive documents from the small but growing collection. Almost 1,000 organizations around the world refer their employees and customers to the collection through links to the library on their web sites. Many transportation planners have come to rely on the online collection, some using it as the primary reference to their own state or agency document.

16. The pilot started in January 1995. Since '95, BTS has conducted a bunch of focus groups and posted a questionnaire on the its web site asking users about the NTL. Users (for some reason, a term apparently used only by drug dealers and computer people to describe their customers) have recommended that the pilot be expanded, in every way from increasing the collection, to developing catalogs and index efforts, to develop systems to delivery non-public documents.

17. An expanded NTL will have its work cut out for it. It's first job will be to pull the scattered puzzle pieces together – to do an inventory of existing resources. It's second job will be to find the box top that shows what the puzzle is supposed to look like when it's done. Essentially, it needs to do an inventory of current resources and develop a plan for using those resources.

a) ***It is a widely-distributed network.*** Public documents of interest to the transportation community are produced in every state and every city in the country. Key intermediaries have been providing important services from places as remote from one and other as Washington, Minneapolis, and Seattle. The distribution of service providers is strength of the current system and certainly belongs in the completed picture we are working toward.

- b) *It provides users with tools for finding out what's available.*** This piece is also easy to recognize as intricate to whole. The Transportation Research Information System (TRIS) is the best example of a successful tool of this type. A team of abstractors scour professional journals and then summarize articles of interest to transportation professionals. The abstracts are posted online and can be searched from anywhere in the world. It's not the whole enchilada (actually, it's more like a menu that tells you what the enchilada is), but it's a great tool.
- c) *It provides full access to Federal reports.*** If any piece of the puzzle easy to identify, this one is. A national information system should provide access to materials produced at the expense of the nation's taxpayers, period. Access to US DOT reports should be reliable, not random.
- d) *It provides a mechanism for sharing documents across state and local boundaries.*** Recommendations from government employees in Washington may be good, but solutions from people who have actually solved problems on the ground in state and local agencies are often better. The national information infrastructure should support direct exchanges of good ideas, without filtering through Washington.
- e) *It provides document delivery services for commercial articles and books.*** This is a missing piece of the puzzle. We know we need it. We don't have it now, but we'll have to find it. Public-sector transportation libraries don't spend enough money on the acquisition of commercial publications. And it's kind of funny because a lot of good ideas come from non-governmental sources. Chances are that the librarian in your local public agency knows about the great things being written by for-profit authors, she just can't afford to buy the books. The solution problem looks something like a series of strategic acquisition and loan agreements between and among libraries, publishers, and commercial document delivery services.
- f) *It ensures the preservation of non-electronic materials of significance to the community.*** For a long time into the future, there will be a need to preserve materials that cannot or should not be made electronic. Copyrighted materials, photographs, maps, and historic collections that are either too fragile or too expensive to digitize clearly fall into this species of things. When the ICC was eliminated in 1995, its library holdings were rescued from disposal and are currently being stored in a warehouse in Denver. The University of Denver plans to find a permanent housing for the collection. However, policies regarding use of the collection have not been developed. The NTL network should work with the University of Denver and other holders of historic collections to 1) build and maintain these important stores of endangered information, and 2) to develop policies that provide the broadest possible access to the materials.
- g) *It captures international materials for use by US researchers and firms.*** International documents represent a wealth of untapped and often undiscovered resources. Under-utilization of foreign resources result in duplication of costly research and waste of valuable time of researchers. However, acquisition of foreign documents is often a rocky and long endeavor. Problems associated with foreign document use include: (a) lack of document ordering information, (b) inadequate bibliographic citations, (c) lack of abstract in English useful for identifying the document's importance, (d) delays in obtaining a hard copy, (e) high cost of translations services and foreign document acquisition, (f) lack of knowledge of what is accessible or available, and (g) lack of familiarity with foreign government organizations.
- h) *It uses rational and common information policies*** To be effective, the NTL will have to be flexible. It would be silly to replace fragmentation with rigid controls or arbitrary conformity requirements. The US Department Transportation, as a leader in the development of the NTL network, will have remain open and responsive to a wide range information producers and users. It will have to work with the transportation community to identify the most pressing needs for better information and address those needs first. It will have to adapt its priorities as the needs of the community change. The policies and standards developed will have to be based on community-wide consensus.

i) *It serves as an information advocate.* As part of the NTL pilot, BTS has held a number of discussions with transportation librarians over the past year. A theme that keeps popping up is that the transportation research community needs strong advocates, one or more organizations that can sound the call for the measures like those discussed in this paper. The advocates' ongoing goals should be to identify areas where information requirements remain unfilled and to highlight promising collections that are not generally accessible.

18. We've really just begun and the road ahead is long, but the US DOT see the "Information Superhighway" leading toward a bright horizon.