

Department of Transportation

Office of the Secretary

Washington, D.C.

ORDER

DOT 1370.4A

9-17-75

SUBJECT: INFORMATION SYSTEMS DATA STANDARDS POLICY AND ORGANIZATION

1. PURPOSE: This Order establishes a Departmental policy for the standardization of data elements and representations (formats and codes) used in information systems and communication within, and by the Department of Transportation (DOT).
2. CANCELLATION: DOT 1370.4, Information Systems Data Standards Policy and Organization of 12-5-72.
3. REFERENCES:
 - a. Part 6, Subtitle A of Title 15 of the Code of Federal Regulations, 12-5-73, which replaced OMB Circular A-86 (STANDARDIZATION OF DATA ELEMENTS AND CODES).
 - b. Federal Information Processing Standard (FIPS PUB) 28, Standardization of Data Elements and Representations, 12-5-73.
 - c. Letter from Mr. Dwight Ink, Assistant OMB Director, to Mr. Charles D. Baker, Assistant Secretary for Policy, Plans and International Affairs, DOT, 9-1-71, which assigned to DOT the lead agency role for the standardization of transportation-related data elements.
4. DISCUSSION:
 - a. Many of the data elements and codes used in information systems within the Department were established as needed to meet the requirements of a single organization without regard to Departmental needs. Some predate the Department. As a result, the same data may be defined and/or represented differently in different systems or communication efforts. In much the same manner, the private transportation-related sector and other Federal agencies have developed data elements, codes, descriptions and classification schemes to serve their specific needs without regard to other modal or Government agency procedures. The resulting multiplicity of definitions, codes and formats makes it impossible to process certain data without elaborate manual translation to convert from one system into a form acceptable to the next.

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b. This lack of standardization prevents direct inter change between systems and integration of information systems within the Department, and hinders communication between DOT and other government and private agencies. It perpetuates duplication in the collection and storage of data.

5. DEFINITIONS. See Attachment 1.

6. POLICY. The Department of Transportation has undertaken a data standardization program as contemplated by Part 6, Subtitle A, Title 15 of the Code of Federal Regulations.

a. The standardization of basic elements of information for use by Government and the transportation industry is essential for the effective and efficient management of information as a resource.

b. The Department will develop, or coordinate the development and implementation of standard definitions and representations (formats and codes) for use in the interchange of information within the Department and, when appropriate, between the Department and outside organizations; and as recommended standards for adoption by the transportation community.

c. Every effort will be made to develop and adopt data standards on the basis of consensus among the parties of principal interest within the Department, other Federal agencies, and the non-governmental communities concerned with transportation.

d. Emphasis will be directed to areas of information which are used by and important to more than a single organization; i.e., to multiple-use data elements or families of data elements.

e. DOT will be guided in this effort by leading data standardization activities such as Federal Information Processing Standards (FIPS) and those of the American National Standards Institute (ANSI). Where no generally accepted standard exists, DOT will be guided wherever possible by data standards and conventions now in use within the Department, other Federal agencies, and the transportation community.

f. A proposed DOT Data Standard may be recommended by any office or administration, or by the DOT Data Standardization Group (DSG) which is established by this Order. A DOT Data Standard will become effective when approved by the Assistant Secretary for Administration and published as an attachment to DOT 1370.5, Department of Transportation Data Standards, of 8-31-73.

- g. DOT Data Standards adopted for use within the Department and those recommended by DOT for use by governmental and/or non-governmental communities outside the Department shall be compatible, i.e., convertible if not identical.
- h. In instances where it is not possible to agree upon a single definition, format and/or representation (code), DOT offices or elements which deviate from a DOT Standard, will provide a means for machine-usable conversion in all systems described by paragraph 7c(2)(a).
- i. Data standards or conventions in use within the Department on the date of this Order which vary from DOT standards may continue in use until a major system revision, or until reached in a specific standardization review. Each DOT standardization exercise will consider and provide guidance regarding the continuance in parallel to DOT Standards, or conversion of variant forms of definition, format, and/or representation currently in use.

7. RESPONSIBILITIES

- a. This Order establishes the DOT Data Standardization Group (DSG) composed of representatives of Secretarial offices and operating elements including the Materials Transportation Bureau and the Transportation Computer Center. The Chief of the Information Systems Division (TAD-25) will be the chairman ex-officio of the DSG. Active leadership will be rotated among the members as designated by the chairman. TAD-25 will provide the secretariat consisting of the Executive Secretary and supportive assistance.
- b. The Data Standardization Group (DSG) will:
 - (1) Represent the Department of Transportation in carrying out the responsibilities set forth in Part 6, Subtitle A of Title 15, Code of Federal Regulations, Standardization of Data Elements and Representations. The Executive Secretary of the DSG is designated as the point of contact within DOT in response to paragraph 6.7(d)(9) of Part 6.
 - (2) Provide leadership for a data standardization program to carry out the policy objectives outlined in paragraph 6 of this Order.
 - (3) Develop and/or recommend and coordinate changes in DOT Data standards.

- (4) Recommend for Secretarial designation as the Office of Primary Responsibility (OPR), organizations having a predominant interest in particular data elements (families of data elements), which agree to accept leadership responsibility for the coordination, development and/or maintenance of specific standards for use by and within DOT; or for carrying out data standardization responsibilities external to the Department.
 - (5) Arrange for the coordination and review of proposed DOT data standards and publish those which are approved.
 - (6) Provide a means for the coordination and interchange of information about DOT information systems which may involve the collection, or movement of data among DOT and Secretarial offices, or between the Department and governmental or transportation communities external to DOT, for the purpose of identifying kinds of information in which data standardization is needed, and to provide assistance in such efforts.
 - (7) Maintain a reference file of data elements and codes or other representations, recognized and approved as DOT Data Standards. Approved DOT Data Standardization Orders (of which this is the first) collectively will constitute the register of approved DOT Data Standards.
- c Role of Operating Elements and Secretarial Officers.
- (1) Each Assistant Secretary and each operating element shall designate a representative with authority to represent his organization in the Data Standardization Group. Each DSG representative shall be responsible for the dissemination within his organization of DSG issuances including DOT Data Standardization Orders, and for making interested/affected persons therein aware of their import.
 - (2) Operating Elements and Secretarial Offices will:
 - (a) Use and comply with DOT Data Standards in all information systems which are or may become involved in communication between operating element and/or Secretarial Offices, or between DOT and elements of the Governmental or Transportation communities external to DOT, except as provided in paragraph 6i.

- (b) Incorporate DOT Data Standards to the maximum extent feasible in meeting data requirements internal to individual administrations or offices.
- (c) Provide appropriate representation and support, and assume such responsibility as may be arranged pursuant to this Order. The head of each operating element or office is hereby authorized to provide this assistance for the DOT Data Standardization effort.
- (d) Inform the DOT Data Standardization Group of information systems being designed or substantially revised, which may be involved in communication of the kind described in paragraph 7c(2)(a). This coordination should occur early in the development or revision phase.
- (e) Submit to the Secretariat of the Data Standardization Group (DSG) for coordination by the DSG any newly-proposed data element standard (definition, representation, code and/or format) intended for use in communications of the type described in paragraph 7c(2)(a).

FOR THE SECRETARY OF TRANSPORTATION:



William S. Heffelfinger
Assistant Secretary
Administration

DEFINITIONS.

1. Data Standardization is the process of adopting a common definition for units of information which, in fact, have essentially the same meaning, together with a common format when written or printed, and a common representation by abbreviation or code. Each DOT standardization exercise will address itself to the need for affirmative action in some or all of these aspects of standardization.
 - a. Definition: A common, unambiguous and discrete understanding of the meaning of the data element (i.e., of what is implied by the name of the data element) is basic, and may be derived from common understanding within the culture, or attained by careful statement. For example, "days of the week" is a term so difficult to misinterpret as to require no explanation; by contrast "States of the United States" is defined in FIPS PUB 5 as "first order subdivisions" of the United States, and includes Puerto Rico, the Virgin Islands, Wake Island, etc. A physical location such as "place" would require very careful definition.
 - b. Format pertains to how an element should be recorded or displayed and is frequently related to understanding as well as to record lengths and the mechanics of input forms and printouts.
 - c. Representation or Code. A number, letter, or combination of alpha and/or numeric characters, or symbol used to express a particular and discrete concept, meaning or value. It may be in the form of a name, abbreviation, code, or numeric value.
2. Data or Information System: A body of information maintained for specific purposes or objectives, composed of definable, common units of information (elements), which is periodically added to or updated by new inputs, and periodically used to produce informational outputs. An information system may be a file or card index or organized notebook or library. In the present context it is more apt to be a collection of standardized records in magnetic storage or other machine-readable form. An information system includes the definitions and conventions, rules, processes and procedures by which it is maintained and used.

3. Data Element. A basic unit of identifiable and definable information. A data element occupies the space provided by fields in a record or blocks on a form. It has an identifying name and value or values for expressing a specific fact. All data pertaining to a single data element will have, at minimum, one characteristic in common, the name; e.g., Monday, Tuesday, Wednesday, are all days of the week.

4. Data Chain, Data String or Composite Data Element. An ordered sequence of related data elements that can be treated as a group or singly. A data element in one system may equate to a string of data elements in another; e.g., the data element: Street address could have the value: 705 N. Brown Street. In another system this information could be recorded under four elements as follows:

<u>Data Element</u>	<u>Value/Item</u>
Name of thoroughfare	Brown
Kind of thoroughfare	Street
Direction	North
Number	705

5. Data Item or Value. This is the actual information or data meeting the data element definition. (See above example.)

6. Data Elements of a Kind Which Ought to be Standardized: Units or classes of information used repetitively in communication between DOT Secretarial offices or administrations or other portions of DOT, or with the governmental and/or transportation community external to DOT, especially when such information may become involved in machine processing.

7. Office of Primary Responsibility (OPR) is a DOT organization having a predominant interest in a data element (or family of data elements) which has accepted primary responsibility for developing and/or maintaining the particular data standard(s), including when appropriate, the coordination of data standardization efforts related to transportation which are external to the Department.

8. Major System Revision is one in which the record is changed or which requires a significant change in programming.

9. Definitions of other, related terms are contained in FIPS PUB 28, Standardization of Data Elements and Representations.