

NFPA®

950

Standard for
Data Development and
Exchange for the Fire Service

2020



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NFPA® 950

Standard for

Data Development and Exchange for the Fire Service

2020 Edition

This edition of NFPA 950, *Standard for Data Development and Exchange for the Fire Service*, was prepared by the Technical Committee on Data Exchange for the Fire Service. It was issued by the Standards Council on November 4, 2019, with an effective date of November 24, 2019, and supersedes all previous editions.

This edition of NFPA 950 was approved as an American National Standard on November 24, 2019.

Origin and Development of NFPA 950

In 2007, at the recommendation of the late Bill McCammon, NFPA treasurer, a letter was advanced by the Metro Fire Chiefs Association (a joint section of the NFPA and the IAFC) and signed by six of the major international fire service organizations, requesting that the NFPA Standards Council embark on an effort to develop a standard on data exchange for fire departments.

As described in the letter, the purpose of the new standard would be to enable a higher level of technology penetration in the fire service to enhance data sharing and analytic capability. The issue was framed to support effective communication and information management on a routine basis and to enhance situational awareness before, during, and after disasters. This need for information exchange was identified as particularly critical with respect to the following:

- (1) The ability to exchange geographic information between local systems and evolving regional and national systems to support such functions as vulnerability/risk assessment and coordinated incident management
- (2) The requirements of evolving mutual aid and resource exchange programs
- (3) The requirements for participation in systems designed to monitor local, regional, and national preparedness levels during times of high risk
- (4) Fire and emergency service access to and utilization of critical infrastructure data collected and distributed through national systems

The effort was initiated to enhance the analysis of organizations, promote exchange of concepts and data development, focus on GIS systems efforts with an industrywide perspective rather than a “one-off,” per-organization approach, and streamline and maintain comprehensive inducements to invest in data systems for the digital age.

Solicitation of members was approved by the Standards Council, and subsequent industrywide response created the membership necessary to draft code-type and scope documents. Efforts by that group at the initial meeting, held at the IAFC headquarters in Fairfax, Virginia, resulted in the Standards Council creating a committee and approving efforts to create a standard on fire service data exchange (NFPA 950, *Standard for Data Development and Exchange for the Fire Service*) in 2008.

The new Technical Committee on Data Exchange for the Fire Service met several times between November 2008 and February 2011 and produced a draft, approved by the Standards Council, that went out for public input in the Fall 2014 cycle. The 2015 edition was the inaugural edition of NFPA 950.

The 2020 edition of NFPA 950 incorporates a major change with the addition of a chapter on records management, which covers various types of software used in the industry, including scheduling, equipment management, and community risk reduction. Also, a chapter was added for data exchange and now includes both JSON and GeoJSON and allows for UDP. The chapter on system design standards was moved to a different chapter, and the concept of time formatting was set with a local UTC offset. The end of the chapter on data administration was used as the basis for the new Chapter 6.

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Rep. International Association of Fire Chiefs

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Chris Farrell, NFPA Staff Liaison

This list represents the membership at the time the Committee was balloted on the final text of this edition. Since that time, changes in the membership may have occurred. A key to classifications is found at the back of the document.

NOTE: Membership on a committee shall not in and of itself constitute an endorsement of the Association or any document developed by the committee on which the member serves.

Committee Scope: This Committee shall have primary responsibility for documents that establish frameworks to 1) provide for the identification, development, management, and exchange of essential data; and 2) enhance an interoperable geospatial data environment for fire and emergency services. This includes documents that establish criteria for and promote the exchange and use of data in common formats critical to the support for decision making in all phases of administration, planning, prevention, preparedness, mitigation, response, and recovery.

Contents

Chapter 1 Administration	950- 4	7.2 Addresses.	950- 8
1.1 Scope.	950- 4	7.3 Date and Time.	950- 8
1.2 Purpose.	950- 4	7.4 Incident Typing Information.	950- 8
1.3 Application.	950- 4	7.5 Text.	950- 8
1.4 Equivalency.	950- 4	7.6 Media.	950- 8
1.5 New Technology.	950- 4	7.7 CAD, RMS, CAD/CAD, CAD/RMS, and RMS/RMS Exchange.	950- 8
Chapter 2 Referenced Publications	950- 4	Chapter 8 Data Development and Records Management	950- 8
2.1 General.	950- 4	8.1 General.	950- 8
2.2 NFPA Publications. (Reserved)	950- 4	8.2 Base Requirements for All Fire Department Specific Software Applications.	950- 9
2.3 Other Publications.	950- 4	8.3 Record Collection and Records Management Software.	950- 9
2.4 References for Extracts in Mandatory Sections.	950- 5	8.4 Personnel Scheduling, Safety, and Administration Software.	950- 9
Chapter 3 Definitions	950- 5	8.5 Equipment and Facilities Software.	950- 10
3.1 General.	950- 5	8.6 Incident Command and Situational Awareness Software.	950- 11
3.2 NFPA Official Definitions.	950- 5	8.7 Analytical and Decision Support Software.	950- 11
3.3 General Definitions.	950- 5	8.8 Risk Reduction Software.	950- 12
Chapter 4 Processes	950- 6	8.9 Imaging Software.	950- 12
4.1 General.	950- 6	8.10 Sensor Software.	950- 13
4.2 Acquisition.	950- 7	8.11 Community Risk Awareness Software.	950- 13
4.3 Data Management.	950- 7	8.12 Digital Alert Warning Systems for Emergency Response Vehicles.	950- 14
4.4 Application of the Standard.	950- 7	8.13 Building Information Modeling Software.	950- 14
Chapter 5 Data Administration	950- 7	Annex A Explanatory Material	950- 14
5.1 Data Ownership.	950- 7	Annex B Additional Resources	950- 15
5.2 External Data.	950- 7	Annex C Informational References	950- 16
5.3 Internal Data.	950- 7	Index	950- 17
Chapter 6 Data Exchange	950- 8		
6.1 General.	950- 8		
6.2 Spatial Data.	950- 8		
6.3 Nonspatial Data.	950- 8		
Chapter 7 System and Data Design Standards (Scalable)	950- 8		
7.1 General.	950- 8		

NFPA 950**Standard for****Data Development and Exchange for the Fire Service**

2020 Edition

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NOTICE: An asterisk (*) following the number or letter designating a paragraph indicates that explanatory material on the paragraph can be found in Annex A.

A reference in brackets [] following a section or paragraph indicates material that has been extracted from another NFPA document. Extracted text may be edited for consistency and style and may include the revision of internal paragraph references and other references as appropriate. Requests for interpretations or revisions of extracted text shall be sent to the technical committee responsible for the source document.

Information on referenced and extracted publications can be found in Chapter 2 and Annex C.

Chapter 1 Administration**1.1 Scope.**

1.1.1* This standard is designed to standardize data for operable information sharing in support of the all-hazards response.

1.1.2 This standard describes a digital information structure and associated requirements and workflows common to fire and emergency services delivery and management for emergency response and administrative use.

1.2 Purpose.

1.2.1 The purpose of this document is to provide a standard framework for the development, management, and sharing of data for all-hazards response agencies and organizations.

1.2.2 This standard defines system structure, design, process and performance management, and data requirements to support the fire service and enable consistent and accurate data exchange between systems.

1.2.2.1 Standard data formats, data services, and other key attributes support the administration, planning, prevention, preparedness, mitigation, response, and recovery missions of local, state, and federal fire service operations and administration.

1.2.2.2 Data elements shall be enabled for geospatial attribution.

1.2.2.3 Data use shall be determined locally by the AHJ, including analytical and geospatial data use in decision making in an interoperable data environment.

1.3 Application.

1.3.1 This standard will leverage existing industry standards. Nothing herein is intended to restrict any jurisdiction from exceeding these minimum requirements.

1.4 Equivalency. Nothing in this standard is intended to prohibit the use of systems, methods, or approaches of equivalent or superior performance to those prescribed by this standard. Technical documentation shall be submitted to the authority having jurisdiction to demonstrate equivalency.

1.5 New Technology.

1.5.1 Nothing in this standard shall be intended to restrict new technologies or alternate arrangements, provided the level of compliance prescribed by this standard is met.

Chapter 2 Referenced Publications

2.1 General. The documents or portions thereof listed in this chapter are referenced within this standard, and shall be considered part of the requirements of this document.

2.2 NFPA Publications. (Reserved)**2.3 Other Publications.**

2.3.1 ISO Publications. International Organization for Standardization, ISO Central Secretariat, BIBC II, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland.

ISO 6709, *Standard representation of geographic point location by coordinates*, 2008.

ISO 8601, *Data elements and interchange formats — Information interchange — Representation of dates and times*, 2004.

ISO 8879, *Information processing — Text and office systems — Standard Generalized Markup Language (SGML)*, 1986.

ISO/IEC 14766, *Information technology — Telecommunications and information exchange between systems — Use of OSI applications over the Internet Transmission Control Protocol (TCP)*, 1997.

ISO 19115, *Geographic information — Metadata*, 2003.

ISO 19136, *Geographic information — Geography Markup Language (GML)*, 2007.

ISO/IEC 21778, *Information technology — The JSON data interchange syntax*, 2017.

ISO/IEC FCD 24706, *Information technology — Metadata for technical standards*, 2013.

2.3.2 U.S. Government Publications. U.S. Government Publishing Office, 732 North Capitol Street, NW, Washington, DC 20401-0001.

National Fire Incident Reporting System (NFIRS), version 5.0, January 1999.

Standard for Symbology, Homeland Security Working Group, Federal Geographic Data Committee, July 2012.

Topographic Mapping *Standard for Symbology*, U.S. Geological Survey, U.S. Department of the Interior.

United States National Grid Standard FGDC-STD-011-2001.

Federal Geographic Data Committee (FGDC), *United States Thoroughfare, Landmark, and Postal Address Data Standard* (DRAFT), 2011.

2.3.3 Other Publications.

International Committee on Electromagnetic Safety (ICES) Data Backup Standard.

Merriam-Webster's Collegiate Dictionary, 11th edition, Merriam-Webster, Inc., Springfield, MA, 2003.

National Emergency Medical Services Information System (NEMSIS), version 3.3.1, February 2013.

National Institute of Standards and Technology (NIST) standards.

National Oceanic and Atmospheric Administration, North American Datum of 1983 (NAD 83), National Geodetic Survey.

RFC 7946, *The GeoJSON format* — IETF tools, 2016.

2.4 References for Extracts in Mandatory Sections.

NFPA 951, *Guide to Building and Utilizing Digital Information*, 2016 edition.

NFPA 1026, *Standard for Incident Management Personnel Professional Qualifications*, 2018 edition.

Chapter 3 Definitions

3.1 General. The definitions contained in this chapter shall apply to the terms used in this standard. Where terms are not defined in this chapter or within another chapter, they shall be defined using their ordinarily accepted meanings within the context in which they are used. *Merriam-Webster's Collegiate Dictionary*, 11th edition, shall be the source for the ordinarily accepted meaning.

3.2 NFPA Official Definitions.

3.2.1* Approved. Acceptable to the authority having jurisdiction.

3.2.2* Authority Having Jurisdiction (AHJ). An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

3.2.3 Shall. Indicates a mandatory requirement.

3.2.4 Should. Indicates a recommendation or that which is advised but not required.

3.2.5 Standard. An NFPA Standard, the main text of which contains only mandatory provisions using the word “shall” to

indicate requirements and that is in a form generally suitable for mandatory reference by another standard or code or for adoption into law. Nonmandatory provisions are not to be considered a part of the requirements of a standard and shall be located in an appendix, annex, footnote, informational note, or other means as permitted in the NFPA Manuals of Style. When used in a generic sense, such as in the phrase “standards development process” or “standards development activities,” the term “standards” includes all NFPA Standards, including Codes, Standards, Recommended Practices, and Guides.

3.3 General Definitions.

3.3.1 Acquisition. The process of creating, collecting or purchasing data for use in a system.

3.3.2 All-Hazards. Any incident or event, natural or human-caused, that warrants action to protect life, property, environment, public health, or safety, and to minimize disruption of government, social, or economic activities [1026, 2018].

N 3.3.3 Application Program Interface (API). A set of commands, functions, protocols, and objects that programmers can use to create software or interact with an external system, providing developers with standard commands for performing common operations so they do not have to write the code from scratch.

3.3.4 Attribute Data. Information about a geographic feature.

3.3.5 Audio Data. Auditory presentation of sounds stored as a file.

N 3.3.6 Community Healthcare Organizations. Framework for the design and evaluation of comprehensive community healthcare programs provided by local EMS systems, which can include disparate elements of government and the private sector.

Δ 3.3.7 Computer Aided/Assisted Dispatch (CAD). A combination of hardware and software that provides data entry, makes resource recommendations, and notifies and tracks those resources before, during, and after alarms, preserving records of those alarms and status changes for later analysis.

3.3.8 Conflation. The process or result of fusing items into one entity; fusion; amalgamation.

3.3.9 Data. The lowest fractional element from which information and then knowledge can be derived; as electronically acquired, captured, stored, queried, analyzed, or transmitted; electronic or computerized in nature.

3.3.10 Data Development. The act of capturing or improving by expanding, enlarging, or refining systems in the data environment.

3.3.11 Data Exchange. The structured transmission of data from one discrete system to another by electronic means.

3.3.12 Data Sharing (Information). The act of exchanging electronic information.

3.3.13 Database Audit. The process of monitoring access to and modification of database objects and resources, including the documentation of sources and any subsequent custody changes.

N 3.3.14* Decimal Degrees. Values of latitude and longitude expressed in decimal format.