



# Federal Implementation Guideline for Electronic Data Interchange

## ASC X12 003070 Transaction Set 997 Functional Acknowledgment

### Implementation Convention



U.S. DEPARTMENT OF COMMERCE  
Technology Administration  
National Institute of  
Standards and Technology

QC

100

.U57

NO. 881-37

1998

**T**he National Institute of Standards and Technology was established in 1988 by Congress to "assist industry in the development of technology . . . needed to improve product quality, to modernize manufacturing processes, to ensure product reliability . . . and to facilitate rapid commercialization . . . of products based on new scientific discoveries."

NIST, originally founded as the National Bureau of Standards in 1901, works to strengthen U.S. industry's competitiveness; advance science and engineering; and improve public health, safety, and the environment. One of the agency's basic functions is to develop, maintain, and retain custody of the national standards of measurement, and provide the means and methods for comparing standards used in science, engineering, manufacturing, commerce, industry, and education with the standards adopted or recognized by the Federal Government.

As an agency of the U.S. Commerce Department's Technology Administration, NIST conducts basic and applied research in the physical sciences and engineering, and develops measurement techniques, test methods, standards, and related services. The Institute does generic and precompetitive work on new and advanced technologies. NIST's research facilities are located at Gaithersburg, MD 20899, and at Boulder, CO 80303. Major technical operating units and their principal activities are listed below. For more information contact the Publications and Program Inquiries Desk, 301-975-3058.

---

### **Office of the Director**

- National Quality Program
- International and Academic Affairs

### **Technology Services**

- Standards Services
- Technology Partnerships
- Measurement Services
- Technology Innovation
- Information Services

### **Advanced Technology Program**

- Economic Assessment
- Information Technology and Applications
- Chemical and Biomedical Technology
- Materials and Manufacturing Technology
- Electronics and Photonics Technology

### **Manufacturing Extension Partnership Program**

- Regional Programs
- National Programs
- Program Development

### **Electronics and Electrical Engineering Laboratory**

- Microelectronics
- Law Enforcement Standards
- Electricity
- Semiconductor Electronics
- Electromagnetic Fields<sup>1</sup>
- Electromagnetic Technology<sup>1</sup>
- Optoelectronics<sup>1</sup>

### **Chemical Science and Technology Laboratory**

- Biotechnology
- Physical and Chemical Properties<sup>2</sup>
- Analytical Chemistry
- Process Measurements
- Surface and Microanalysis Science

### **Physics Laboratory**

- Electron and Optical Physics
- Atomic Physics
- Optical Technology
- Ionizing Radiation
- Time and Frequency<sup>1</sup>
- Quantum Physics<sup>1</sup>

### **Materials Science and Engineering Laboratory**

- Intelligent Processing of Materials
- Ceramics
- Materials Reliability<sup>1</sup>
- Polymers
- Metallurgy
- NIST Center for Neutron Research

### **Manufacturing Engineering Laboratory**

- Precision Engineering
- Automated Production Technology
- Intelligent Systems
- Fabrication Technology
- Manufacturing Systems Integration

### **Building and Fire Research Laboratory**

- Structures
- Building Materials
- Building Environment
- Fire Safety Engineering
- Fire Science

### **Information Technology Laboratory**

- Mathematical and Computational Sciences<sup>2</sup>
- Advanced Network Technologies
- Computer Security
- Information Access and User Interfaces
- High Performance Systems and Services
- Distributed Computing and Information Services
- Software Diagnostics and Conformance Testing

---

<sup>1</sup>At Boulder, CO 80303.

<sup>2</sup>Some elements at Boulder, CO.

# **Federal Implementation Guideline for Electronic Data Interchange**

## **ASC X12 003070 Transaction Set 997 Functional Acknowledgment**

### **Implementation Convention**

Electronic Commerce Acquisition Program Management Office  
Standard Management Committee - Secretariat  
National Institute of Standards and Technology  
Gaithersburg, MD 20899-0001

Editor: Dr. Jean-Philippe Favreau

January 1998



**U.S. DEPARTMENT OF COMMERCE**  
William M. Daley, Secretary

**Technology Administration**  
Gary R. Bachula, Acting Under Secretary for Technology

**National Institute of Standards and Technology**  
Robert E. Hebner, Acting Director

## **Reports on Information Technology**

The National Institute of Standards and Technology (NIST)'s Information Technology Laboratory (ITL) develops standards and guidelines, provides technical assistance, and conducts research for computers and resources. As part of the overall federal effort to establish a single face to industry for conducting electronic commerce, ITL has been designated as the organization responsible for coordinating the development of Federal Implementation Conventions (ICs) for Electronic Data Interchange (EDI). ICs are defined by functional-area experts who create and select options from standard EDI Transaction Sets to yield the implementations to be used for practical EDI. These ICs are made available to federal agencies and industry by electronic means and this Special Publication Series.

**National Institute of Standards and Technology Special Publication 881-37**  
**Natl. Inst. Stand. Technol. Spec. Publ. 881-37, 12 pages (Jan. 1998)**  
**CODEN: NSPUE2**

**U.S. GOVERNMENT PRINTING OFFICE**  
**WASHINGTON: 1998**

---

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402

# 997 Functional Acknowledgement

Functional Group ID=**FA**

## Introduction:

This Draft Standard for Trial Use contains the format and establishes the data contents of the Functional Acknowledgement Transaction Set (997) for use within the context of an Electronic Data Interchange (EDI) environment. The transaction set can be used to define the control structures for a set of acknowledgements to indicate the results of the syntactical analysis of the electronically encoded documents. The encoded documents are the transaction sets, which are grouped in functional groups, used in defining transactions for business data interchange. This standard does not cover the semantic meaning of the information encoded in the transaction sets.

## Notes:

*Use this implementation convention to acknowledge receipt, and acceptance or rejection of a functional group and the transaction set(s) contained within it based upon EDI translation software syntax edits.*

	<u>Pos. No.</u>	<u>Seg. ID</u>	<u>Name</u>	<u>Req. Des.</u>	<u>Max.Use</u>	<u>Loop Repeat</u>	<u>Notes and Comments</u>
Must Use	010	ST	Transaction Set Header	M	1		n1
Must Use	020	AK1	Functional Group Response Header	M	1		n2
			LOOP ID - AK2			999999	
	030	AK2	Transaction Set Response Header	O	1		n3
			LOOP ID - AK3			999999	
	040	AK3	Data Segment Note	O	1		c1
	050	AK4	Data Element Note	O	99		
Must Use	060	AK5	Transaction Set Response Trailer	M	1		
Must Use	070	AK9	Functional Group Response Trailer	M	1		
Must Use	080	SE	Transaction Set Trailer	M	1		

## Transaction Set Notes

- These acknowledgements shall not be acknowledged, thereby preventing an endless cycle of acknowledgements of acknowledgements.  
The Functional Group Header Segment (GS) is used to start the envelope for the Functional Acknowledgement Transaction Sets. In preparing the functional group of acknowledgements, the application sender's code and the application receiver's code, taken from the functional group being acknowledged, are exchanged; therefore, one acknowledgement functional group responds to only those functional groups from one application receiver's code to one application sender's code.  
There is only one Functional Acknowledgement Transaction Set per acknowledged functional group.
- AK1 is used to respond to the functional group header and to start the acknowledgement for a functional group. There shall be one AK1 segment for the functional group that is being acknowledged.
- AK2 is used to start the acknowledgement of a transaction set within the received functional group. The AK2 segments shall appear in the same order as the transaction sets in the functional group that has been received and is being acknowledged.

## Transaction Set Comments

- The data segments of this standard are used to report the results of the syntactical analysis of the functional groups of transaction sets; they report the extent to which the syntax complies with the standards for transaction sets and functional groups. They do not report on the semantic meaning of the transaction sets (for example, on the ability of the receiver to comply with the request of the sender).

**Segment:** **ST** Transaction Set Header  
**Position:** 010  
**Loop:**  
**Level:**  
**Usage:** Mandatory  
**Max Use:** 1  
**Purpose:** To indicate the start of a transaction set and to assign a control number  
**Syntax Notes:**  
**Semantic Notes:** 1 The transaction set identifier (ST01) used by the translation routines of the interchange partners to select the appropriate transaction set definition (e.g., 810 selects the Invoice Transaction Set).  
**Comments:**

**Data Element Summary**

	<u>Ref.</u> <u>Des.</u>	<u>Data</u> <u>Element</u>	<u>Name</u>	<u>Attributes</u>
Must Use	ST01	143	Transaction Set Identifier Code Code uniquely identifying a Transaction Set 997 Functional Acknowledgement	M ID 3/3
Must Use	ST02	329	Transaction Set Control Number Identifying control number that must be unique within the transaction set functional group assigned by the originator for a transaction set <i>Use to transmit a unique number assigned by the originator of the transaction set. The number may be system generated. This same number will be cited in SE02.</i>	M AN 4/9

**Segment:** **AK1** Functional Group Response Header  
**Position:** 020  
**Loop:**  
**Level:**  
**Usage:** Mandatory  
**Max Use:** 1  
**Purpose:** To start acknowledgement of a functional group  
**Syntax Notes:**  
**Semantic Notes:** 1 AK101 is the functional ID found in the GS segment (GS01) in the functional group being acknowledged.  
 2 AK102 is the functional group control number found in the GS segment in the functional group being acknowledged.

**Comments:**  
**Notes:**

1. Use to identify the unique identification number of the functional group in which the transaction set(s) being acknowledged was received.
2. Only one functional group may be referenced in a single 997 acknowledgement transaction set.

**Data Element Summary**

Ref.	Data			
<u>Des.</u>	<u>Element</u>	<u>Name</u>	<u>Attributes</u>	
Must Use	AK101	479	Functional Identifier Code	M ID 2/2
			Code identifying a group of application related transaction sets	
			<i>Cite, using the appropriate code from the X12 code list, the functional group ID found in GS01 of the functional group being acknowledged.</i>	
			Refer to 003070 Data Element Dictionary for acceptable code values.	
Must Use	AK102	28	Group Control Number	M N0 1/9
			Assigned number originated and maintained by the sender	
			<i>Use to identify the number cited in GS06 of the functional group being acknowledged.</i>	

**Segment:** **AK2** Transaction Set Response Header  
**Position:** 030  
**Loop:** AK2 Optional  
**Level:**  
**Usage:** Optional  
**Max Use:** 1  
**Purpose:** To start acknowledgement of a single transaction set  
**Syntax Notes:**  
**Semantic Notes:**

- 1 AK201 is the transaction set ID found in the ST segment (ST01) in the transaction set being acknowledged.
- 2 AK202 is the transaction set control number found in the ST segment in the transaction set being acknowledged.

**Comments:**  
**Notes:**

1. *Use to identify the unique identification number of the transaction set being acknowledged.*
2. *AK2 and AK5 shall be provided for each transaction set that is accepted.*
3. *Also, AK2 and AK5 shall be provided for each transaction set being rejected for containing a syntactical error.*

**Data Element Summary**

	<u>Ref.</u> <u>Des.</u>	<u>Data</u> <u>Element</u>	<u>Name</u>	<u>Attributes</u>
Must Use	AK201	143	<b>Transaction Set Identifier Code</b> Code uniquely identifying a Transaction Set Refer to 003070 Data Element Dictionary for acceptable code values.	M ID 3/3
Must Use	AK202	329	<b>Transaction Set Control Number</b> Identifying control number that must be unique within the transaction set functional group assigned by the originator for a transaction set <i>Use to identify the number cited in SE02/ST02 of the transaction set being acknowledged.</i>	M AN 4/9



**Segment:** **AK3** Data Segment Note  
**Position:** 040  
**Loop:** AK3 Optional  
**Level:**  
**Usage:** Optional  
**Max Use:** 1  
**Purpose:** To report errors in a data segment and identify the location of the data segment  
**Syntax Notes:**  
**Semantic Notes:**  
**Comments:**  
**Notes:**

*This 1/AK3/040 loop shall be used only to identify one or more segments containing syntactical errors resulting in rejection of the transaction set or functional group. This loop shall not be used when transaction set and functional group receipt and acceptance is being acknowledged.*

**Data Element Summary**

Ref. Des.	Data Element	Name	Attributes
Must Use	AK301	721 Segment ID Code Code defining the segment ID of the data segment in error (See Appendix A - Number 77) <i>Use to identify the segment containing syntactical errors, as it appears in the ASC X12 Data Segment Dictionary, e.g., DTM, N1, REF, etc.</i>	M ID 2/3
Must Use	AK302	719 Segment Position in Transaction Set The numerical count position of this data segment from the start of the transaction set: the transaction set header is count position 1 <i>Use to identify the segment's sequential position within the data stream of the transaction set as transmitted. This number is not the segment's position number portrayed in the transaction set structure. For example, if the segments used in an 810 request for progress payment were as follows: ST, BIG, REF, N1, N1, PER, ITD, DTM, IT1, IT1, SLN, SLN, SLN, TDS, CTT, SE, and there was a syntax error in the second use of the N1 segment, the number cited would be 5. If the syntax error was in the third use of the SLN segment, the number cited would be 13.</i>	M N0 1/6
	AK303	447 Loop Identifier Code The loop ID number given on the transaction set diagram is the value for this data element in segments LS and LE	O AN 1/6
	AK304	720 Segment Syntax Error Code Code indicating error found based on the syntax editing of a segment <i>1. Use only when a segment is being rejected, to identify the basis for rejection. Do not use when the error is in a data element within the segment and editing is being done at least to that level.</i> Refer to 003070 Data Element Dictionary for acceptable code values.	O ID 1/3

**Segment:** **AK4** Data Element Note  
**Position:** 050  
**Loop:** AK3 Optional  
**Level:**  
**Usage:** Optional  
**Max Use:** 99  
**Purpose:** To report errors in a data element and identify the location of the data element  
**Syntax Notes:**  
**Semantic Notes:**  
**Comments:**  
**Notes:**

*Use to identify an error with a data element. When used, there must be a use of the AK3 segment citing the segment in which the data element with the error appears. Use multiple occurrences of this segment to identify all data element errors within the segment specified in the preceding AK3 segment.*

**Data Element Summary**

	<u>Ref. Des.</u>	<u>Data Element</u>	<u>Name</u>	<u>Attributes</u>
Must Use	AK401	C030	<b>Position in Segment</b> Code indicating the relative position of a simple data element, or the relative position of a composite data structure combined with the relative position of the component data element within the composite data structure, in error; the count starts with 1 for the simple data element or composite data structure immediately following the segment ID	M
Must Use	C03001	722	<b>Element Position in Segment</b> This is used to indicate the relative position of a simple data element, or the relative position of a composite data structure with the relative position of the component within the composite data structure, in error; in the data segment the count starts with 1 for the simple data element or composite data structure immediately following the segment ID <i>Use to indicate the position of the data element, within the segment, containing the error, e.g., 3, 12, etc.</i>	M N0 1/2
	C03002	1528	<b>Component Data Element Position in Composite</b> To identify the component data element position within the composite that is in error	O N0 1/2
Must Use	AK402	725	<b>Data Element Reference Number</b> Reference number used to locate the data element in the Data Element Dictionary <i>Use to identify the data element number as it appears in the ASC X12 Data Element Dictionary, for example, the data element number for N101 is 98, the data element number for N103 is 66.</i>	O N0 1/4
Must Use	AK403	723	<b>Data Element Syntax Error Code</b> Code indicating the error found after syntax edits of a data element Refer to 003070 Data Element Dictionary for acceptable code values.	M ID 1/3
	AK404	724	<b>Copy of Bad Data Element</b> This is a copy of the data element in error	O AN 1/99

**Segment:** **AK5** Transaction Set Response Trailer  
**Position:** 060  
**Loop:** AK2 Optional  
**Level:**  
**Usage:** Mandatory  
**Max Use:** 1  
**Purpose:** To acknowledge acceptance or rejection and report errors in a transaction set  
**Syntax Notes:**  
**Semantic Notes:**  
**Comments:**

**Notes:** *Use to indicate whether the transaction set indicated in the corresponding AK2 segment was accepted or rejected. If the transaction set is being rejected, use this segment to identify up to five (5) syntax errors at the transaction level.*

#### Data Element Summary

Ref.	Data	Name	Attributes
<u>Des.</u>	<u>Element</u>		
Must Use	AK501	<b>717 Transaction Set Acknowledgement Code</b> Code indicating accept or reject condition based on the syntax editing of the transaction set Refer to 003070 Data Element Dictionary for acceptable code values.	<b>M ID 1/1</b>
	AK502	<b>718 Transaction Set Syntax Error Code</b> Code indicating error found based on the syntax editing of a transaction set <i>1. Use only when a transaction set is being rejected, to identify the basis for rejection. If multiple codes apply, they may be carried in AK503 through AK506, as necessary. No individual code may be used more than once in a single use of this segment.</i> <i>2. Use code 5 when the 1/AK3/040 loop is not used and syntactical errors occurred below the transaction set level.</i> Refer to 003070 Data Element Dictionary for acceptable code values.	<b>O ID 1/3</b>
	AK503	<b>718 Transaction Set Syntax Error Code</b> Code indicating error found based on the syntax editing of a transaction set Refer to 003070 Data Element Dictionary for acceptable code values.	<b>O ID 1/3</b>
	AK504	<b>718 Transaction Set Syntax Error Code</b> Code indicating error found based on the syntax editing of a transaction set Refer to 003070 Data Element Dictionary for acceptable code values.	<b>O ID 1/3</b>
	AK505	<b>718 Transaction Set Syntax Error Code</b> Code indicating error found based on the syntax editing of a transaction set Refer to 003070 Data Element Dictionary for acceptable code values.	<b>O ID 1/3</b>
	AK506	<b>718 Transaction Set Syntax Error Code</b> Code indicating error found based on the syntax editing of a transaction set Refer to 003070 Data Element Dictionary for acceptable code values.	<b>O ID 1/3</b>

**Segment:** **AK9** Functional Group Response Trailer  
**Position:** 070  
**Loop:**  
**Level:**  
**Usage:** Mandatory  
**Max Use:** 1  
**Purpose:** To acknowledge acceptance or rejection of a functional group and report the number of included transaction sets from the original trailer, the accepted sets, and the received sets in this functional group

**Syntax Notes:**

**Semantic Notes:**

**Comments:** 1 If AK901 contains the value "A" or "E", then the transmitted functional group is accepted. If AK901 contains the value "R", then the transmitted group is rejected.

- Notes:**
1. Use only to indicate whether the functional group was accepted or rejected based on syntax errors in the functional group header or trailer.
  2. If a functional group is rejected, all transaction sets within that group must be rejected using the AK9. In this case, individual AK2s for the rejected transaction sets need not be provided.
  3. If the functional group is being rejected, use to identify up to five (5) syntax errors at the functional group level.

**Data Element Summary**

Ref. Des.	Data Element	Name	Attributes
Must Use AK901	715	<b>Functional Group Acknowledge Code</b> Code indicating accept or reject condition based on the syntax editing of the functional group Refer to 003070 Data Element Dictionary for acceptable code values.	M ID 1/1
Must Use AK902	97	<b>Number of Transaction Sets Included</b> Total number of transaction sets included in the functional group or interchange (transmission) group terminated by the trailer containing this data element	M N0 1/6
Must Use AK903	123	<b>Number of Received Transaction Sets</b> Number of Transaction Sets received	M N0 1/6
Must Use AK904	2	<b>Number of Accepted Transaction Sets</b> Number of accepted Transaction Sets in a Functional Group	M N0 1/6
AK905	716	<b>Functional Group Syntax Error Code</b> Code indicating error found based on the syntax editing of the functional group header and/or trailer <i>1. Use only when a functional group is being rejected to identify the basis for rejection.</i> <i>2. Codes may also be carried in AK906 through AK909, but no individual code may be used more than once in a single iteration of this segment.</i> Refer to 003070 Data Element Dictionary for acceptable code values.	O ID 1/3
AK906	716	<b>Functional Group Syntax Error Code</b> Code indicating error found based on the syntax editing of the functional group header and/or trailer Refer to 003070 Data Element Dictionary for acceptable code values.	O ID 1/3
AK907	716	<b>Functional Group Syntax Error Code</b> Code indicating error found based on the syntax editing of the functional group header and/or trailer Refer to 003070 Data Element Dictionary for acceptable code values.	O ID 1/3
AK908	716	<b>Functional Group Syntax Error Code</b> Code indicating error found based on the syntax editing of the functional group	O ID 1/3

header and/or trailer

Refer to 003070 Data Element Dictionary for acceptable code values.

**AK909**

**716**

**Functional Group Syntax Error Code**

**O ID 1/3**

Code indicating error found based on the syntax editing of the functional group header and/or trailer

Refer to 003070 Data Element Dictionary for acceptable code values.

**Segment:** **SE** Transaction Set Trailer  
**Position:** 080  
**Loop:**  
**Level:**  
**Usage:** Mandatory  
**Max Use:** 1  
**Purpose:** To indicate the end of the transaction set and provide the count of the transmitted segments (including the beginning (ST) and ending (SE) segments)  
**Syntax Notes:**  
**Semantic Notes:**  
**Comments:** 1 SE is the last segment of each transaction set.

**Data Element Summary**

	<u>Ref.</u>	<u>Data</u>	<u>Name</u>	<u>Attributes</u>
	<u>Des.</u>	<u>Element</u>		
Must Use	SE01	96	<b>Number of Included Segments</b> Total number of segments included in a transaction set including ST and SE segments	M N0 1/10
Must Use	SE02	329	<b>Transaction Set Control Number</b> Identifying control number that must be unique within the transaction set functional group assigned by the originator for a transaction set <i>Use the same number cited in ST02.</i>	M AN 4/9

# *NIST* Technical Publications

## *Periodical*

---

**Journal of Research of the National Institute of Standards and Technology**—Reports NIST research and development in those disciplines of the physical and engineering sciences in which the Institute is active. These include physics, chemistry, engineering, mathematics, and computer sciences. Papers cover a broad range of subjects, with major emphasis on measurement methodology and the basic technology underlying standardization. Also included from time to time are survey articles on topics closely related to the Institute's technical and scientific programs. Issued six times a year.

## *Nonperiodicals*

---

**Monographs**—Major contributions to the technical literature on various subjects related to the Institute's scientific and technical activities.

**Handbooks**—Recommended codes of engineering and industrial practice (including safety codes) developed in cooperation with interested industries, professional organizations, and regulatory bodies.

**Special Publications**—Include proceedings of conferences sponsored by NIST, NIST annual reports, and other special publications appropriate to this grouping such as wall charts, pocket cards, and bibliographies.

**National Standard Reference Data Series**—Provides quantitative data on the physical and chemical properties of materials, compiled from the world's literature and critically evaluated. Developed under a worldwide program coordinated by NIST under the authority of the National Standard Data Act (Public Law 90-396). NOTE: The Journal of Physical and Chemical Reference Data (JPCRD) is published bimonthly for NIST by the American Chemical Society (ACS) and the American Institute of Physics (AIP). Subscriptions, reprints, and supplements are available from ACS, 1155 Sixteenth St., NW, Washington, DC 20056.

**Building Science Series**—Disseminates technical information developed at the Institute on building materials, components, systems, and whole structures. The series presents research results, test methods, and performance criteria related to the structural and environmental functions and the durability and safety characteristics of building elements and systems.

**Technical Notes**—Studies or reports which are complete in themselves but restrictive in their treatment of a subject. Analogous to monographs but not so comprehensive in scope or definitive in treatment of the subject area. Often serve as a vehicle for final reports of work performed at NIST under the sponsorship of other government agencies.

**Voluntary Product Standards**—Developed under procedures published by the Department of Commerce in Part 10, Title 15, of the Code of Federal Regulations. The standards establish nationally recognized requirements for products, and provide all concerned interests with a basis for common understanding of the characteristics of the products. NIST administers this program in support of the efforts of private-sector standardizing organizations.

*Order the following NIST publications—FIPS and NISTIRs—from the National Technical Information Service, Springfield, VA 22161.*

**Federal Information Processing Standards Publications (FIPS PUB)**—Publications in this series collectively constitute the Federal Information Processing Standards Register. The Register serves as the official source of information in the Federal Government regarding standards issued by NIST pursuant to the Federal Property and Administrative Services Act of 1949 as amended, Public Law 89-306 (79 Stat. 1127), and as implemented by Executive Order 11717 (38 FR 12315, dated May 11, 1973) and Part 6 of Title 15 CFR (Code of Federal Regulations).

**NIST Interagency Reports (NISTIR)**—A special series of interim or final reports on work performed by NIST for outside sponsors (both government and nongovernment). In general, initial distribution is handled by the sponsor; public distribution is by the National Technical Information Service, Springfield, VA 22161, in paper copy or microfiche form.

**U.S. Department of Commerce**  
National Institute of Standards  
and Technology  
Gaithersburg, MD 20899-0001

Official Business  
Penalty for Private Use \$300