

Appendix D: Transmission Overview

Paper business documents are sent in envelopes, and it is possible to mail many documents in a single envelope. It is no different with electronic documents. EDI incorporates several levels of envelopes in order to insure that each document is correctly identified, and that only like documents are grouped together.

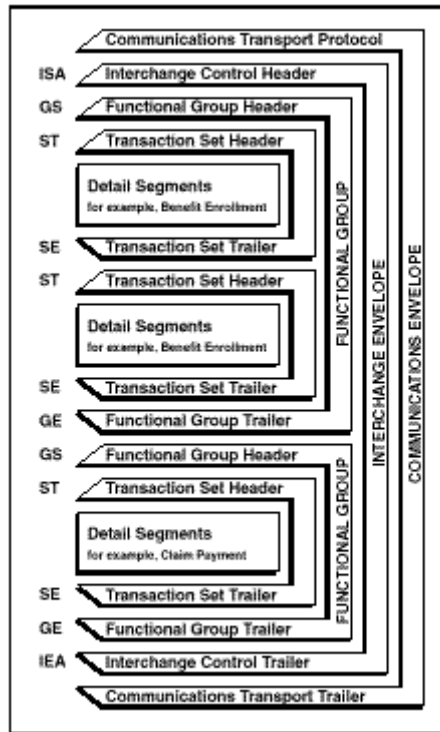


Figure1: Transmission Control Structures

The electronic envelope is actually composed of two parts: a “header” placed at the beginning of a series of related records, and a “trailer” that will follow the last of the records. Similar transaction sets, called “functional groups,” can be sent together within a transmission. Each functional group is prefaced by a group start segment (GS); and a functional group is terminated by a group end segment (GE). One or more functional groups are prefaced by an interchange header (ISA) and followed by an interchange trailer (IEA) to form the outer envelope.

Functional Group

Control structures within the functional group envelope include the functional identifier code in GS01. The Functional Identifier Code is used by the commercial translation software during interpretation of the interchange to determine the different transaction sets that may be included within the functional group. Each transaction set is assigned a functional identifier code, which is the first data element of the header segment. Only those transaction sets with the same code are considered members of one functional group. For example, Transaction Set 130 has been assigned the functional group code of "ED." At this point in time TS130 is the only transaction set with this function group code and therefore would be the only type of transaction found in functional group having GS01=ED. If an inappropriate transaction set is contained within the functional group, most commercial translation software will suspend the functional group within the interchange.

The Application Sender's Code in GS02 can be used to identify the sending unit of the transmission. The Application Receiver's Code in GS03 can be used to identify the receiving unit of the transmission. The functional group contains a creation date (GS04) and creation time (GS05) for the functional group. The Group Control Number is contained in GS06. These data elements (GS04, GS05, AND GS06) can be used for debugging purposes during problem resolution. GS08,Version/Release/Industry Identifier Code is the version/release/sub-release of the transaction sets being transmitted in this functional group. The table below provides guidance for the value for this data element. The GS08 does not represent the version of the interchange (ISA/IEA) envelope but rather the version/release/sub-release of the transaction sets that are encompassed within the GS/GE envelope.

The Functional Group Control Number in GS06 must be identical to data element 02 of the GE segment. Data element GE01 indicates the number of transaction sets within the functional group. In most commercial translation software products, an aggregate count of the transaction sets is kept while interpreting the functional group. This count is then verified with data element GE01.

GS – Functional Group Header Data Element Summary					
Ref Des	Data Elem	Name	Attributes		
GS01	479	<p>Functional ID Code This is a code identifying a group of application related transaction sets. This code set is included in Appendix B.</p> <p>ED Student Educational Record (Transcript) Transaction Set 130 AK Student Educational Record (Transcript) Acknowledgment Transaction Set 131 FA Functional Acknowledgment Transaction Set 997 RY Request for Student Educational Record (Transcript) Transaction Set 146 RZ Response to Request For Student Educational Record (Transcript) Transaction Set 147</p>	M	ID	2/2
GS02	142	<p>Application Sender's Code This is a code identifying the party sending the transmission. Codes are agreed to by trading partners.</p>	M	AN	2/15
GS03	124	<p>Application Receiver's Code This is a code identifying the party receiving the transmission. Codes are agreed to by trading partners.</p>	M	AN	2/15
GS04	373	<p>Date This is the date in the format CCYYMMDD. For example, a transmission made on October 20, 1991 would indicate "19911020".</p>	M	DT	8/8

GS – Functional Group Header Data Element Summary					
Ref Des	Data Elem	Name	Attributes		
GS05	337	<p>Time This is the time expressed in 24-hour clock time as follows: HHMM, or HHMMSS, or HHMMSSD, or HHMMSSDD, where H=hours (00-23), M=Minutes (00-59), S=Integer Seconds (00-59) and DD=Decimal Seconds; decimal seconds are expressed as follows: D=tenths (0-9) and DD=hundredths (00-99).</p>	M	TM	4/8
GS06	28	<p>Group Control Number This is an assigned number originated and maintained by the sender.</p>	M	N0	1/9
GS07	455	<p>Responsible Agency Code This is a code used in conjunction with data element 480 to identify the issuer of the standard. We will use the code "X" for the Accredited Standards Committee X12.</p>	M	ID	1/2
GS08	480	<p>Version/Release/Industry Identifier Code This is a code indicating the version, release, subrelease and industry identifier of the EDI standard being used, including the GS and GE segments. Positions 1-3 (version number), positions 4-6 (release and subrelease of version), positions 7-12 (industry or association identifier, optionally assigned by the user). Examples of the first six digits of the valid codes are:</p> <p>003040 Draft Standards Approved for Publication by ASC X12 Procedures Review Board through October 1993</p> <p>003052 Draft Standards Approved for Publication by ASC X12 Procedures Review Board through February 1996</p> <p>004010 Draft Standards Approved for Publication by ASC X12 Procedures Review Board through October 1997</p> <p>"003041ED0020" for Version 2 "003052ED0030" for Version 3 and "004010ED0040" for Version 4 (this Implementation Guide).</p>	M	AN	1/12

Semantic Notes:

1. GS04 is the Group Date.
2. GS05 is the Group Time.
3. The data interchange control number GS06 in this header must be identical to the same data element in the associated Functional Group Trailer GE02.

Comments:

1. A functional group of related transaction sets, within the scope of X12 standards, consists of a collection of similar transaction sets enclosed by a functional group header and a functional group trailer.

GE – Functional Group Trailer Data Element Summary					
Ref Des	Data Elem	Name	Attributes		
GE01	97	Number of Transaction Sets Included This is the total number of transaction sets included in the functional group or interchange (transmission) group terminated by the trailer containing the data element.	M	NO	1/6
GE02	28	Group Control Number This is an assigned number originated and maintained by the sender.	M	NO	1/9

Semantic Notes:

1. The data interchange control number GE02 in this trailer must be identical to the same data element in the associated Functional Group Header GS06.

Comment:

1. The use of identical data interchange control numbers in the associated functional group header and trailer is designed to maximize functional group integrity. The control number is the same as that used in the corresponding header.

Interchange Control Structures

A complete transmission is delineated by the interchange header (ISA segment) and the interchange trailer (IEA segment). The interchange header starts and identifies one or more functional groups and defines the element separators and the segment terminator for the transmission, identifies the sender and receiver, and provides other control information. The interchange trailer defines the end of the transmission and provides a count of contained functional groups.

The interchange control number is contained in data element ISA13 of the ISA segment. The identical control number must also occur in data element 02 of the IEA segment. Most commercial translation software products will verify that these two fields are identical. In most translation software products, if these fields are different the interchange will be “suspended” in error.

There are many other features of the ISA segment that are used for control measures. For instance, the ISA segment contains data elements such as authorization information, security information, sender identification, and receiver identification. The interchange date and time data elements as well as the interchange control number within the ISA segment are used for debugging purposes when there is a problem with the transmission or the interchange. Data Element ISA12, Interchange Control Version Number, indicates the version of the ISA/IEA envelope. The ISA12 does not indicate the version of the transaction set that is being transmitted but rather the envelope that encapsulates the transaction.

The ending component of the interchange or ISA/IEA envelope is the IEA segment. Data element IEA01 indicates the number of functional groups that are included within the interchange. In most commercial translation software products, an aggregate count of functional groups is kept while interpreting the interchange. This count is then verified with data element IEA01. If there is a discrepancy, in most commercial products, the interchange is suspended. The other data element in the IEA segment is IEA02 which is referenced above.

ISA – Interchange Control Header Data Element Summary					
Ref Des	Data Elem	Name	Attributes		
ISA01	I01	Authorization Information Qualifier This is a code to identify the type of information in the Authorization Information. Examples of codes are 00 No Authorization Information Present (No Meaningful Information in I02)	M	ID	2/2
ISA02	I02	Authorization Information Information used for additional identification or authorization of the sender or the data in the interchange. The type of information is set by the Authorization Information Qualifier (101).	M	AN	10/10
ISA03	I03	Security Information Qualifier Code to identify the type of information in the Security Information. Codes that may be used are 00 No Security Information Present (No Meaningful Information in I04)	M	ID	2/2
ISA04	I04	Security Information This is used for identifying the security information about the sender or the data in the interchange. The type of information is set by the Security Information Qualifier (103).	M	AN	10/10

ISA – Interchange Control Header Data Element Summary					
Ref Des	Data Elem	Name	Attributes		
ISA05	I05	<p>Interchange ID Qualifier Qualifier to designate the system/method of code structure used to designate the sender or receiver ID element being qualified. Codes that may be used are</p> <ul style="list-style-type: none"> 21 Integrated Postsecondary Education Data System, or (IPEDS) 22 Federal Interagency Commission on Education, or (FICE) 23 National Center for Education Statistics Common Core of Data 12-Digit Number for Pre-K-Grade 12 Institutes or NCES 24 The College Board's Admission Testing Program 4-Digit Code of Postsecondary Institutions, or ATP 25 American College Testing Program 4-Digit/ Code of Postsecondary Institutions, or ACT 26 Statistics of Canada List of Postsecondary Institutions 35 Statistics Canada Canadian College Student Information System Institution Codes 36 Statistics Canada University Student Information System Institution Codes ZZ Mutually Defined 	M	ID	2/2
ISA06	I06	<p>Interchange Sender ID Identification code published by the sender for other parties to use as the receiver ID to route data to them. The sender always codes this value in the sender ID element.</p>	M	ID	15/15

ISA – Interchange Control Header Data Element Summary					
Ref Des	Data Elem	Name	Attributes		
ISA07	I05	<p>Interchange ID Qualifier Qualifier to designate the system/method of code structure used to designate the sender or receiver ID element being qualified. Codes that may be used are</p> <ul style="list-style-type: none"> 21 Integrated Postsecondary Education Data System, or (IPEDS) 22 Federal Interagency Commission on Education, or (FICE) 23 National Center for Education Statistics Common Core of Data 12-Digit Number for Pre-K-Grade 12 Institutes or NCES 24 The College Board's Admission Testing Program 4-Digit Code of Postsecondary Institutions, or ATP 25 American College Testing Program 4-Digit/ Code of Postsecondary Institutions, or ACT 26 Statistics of Canada List of Postsecondary Institutions 35 Statistics Canada Canadian College Student Information System Institution Codes 36 Statistics Canada University Student Information System Institution Codes ZZ Mutually Defined 	M	ID	2/2
ISA08	I07	<p>Interchange Receiver ID Identification code published by the receiver of the data. When sending, it is used by the sender as their sending ID, thus other parties sending to them will use this as a receiving ID to route data to them.</p>	M	AN	15/15
ISA09	I08	<p>Interchange Date Date of the interchange.</p>	M	DT	6/6
ISA10	I09	<p>Interchange Time Time of the interchange.</p>	M	TM	4/4
ISA11	I10	<p>Interchange Control Standards Identifier Code to identify the agency responsible for the control standard used by the message that is enclosed by the interchange header and trailer.</p> <ul style="list-style-type: none"> U This is the code to identify the United States EDI Community of ASC X12 	M	ID	1/1

ISA – Interchange Control Header Data Element Summary					
Ref Des	Data Elem	Name	Attributes		
ISA12	I11	<p>Interchange Control Version Number This version number covers the interchange control segments. Codes that may be used are</p> <p>00304 Draft Standards Approved for Publication by ASC X12 Procedures Review Board through October 1993</p> <p>00305 Draft Standards Approved for Publication by ASC X12 Procedures Review Board through February 1996</p> <p>00401 Draft Standards Approved for Publication by ASC X12 Procedures Review Board through October 1997</p> <p>"00304" for Version 2 "00305" for Version 3 and "00401" for Version 4 (this Implementation Guide).</p>	M	ID	5/5
ISA13	I12	<p>Interchange Control Number This number uniquely identifies the interchange data to the sender. It is assigned by the sender. Together with the sender ID it uniquely identifies the interchange data to the receiver. It is suggested that the sender, receiver, and all third parties be able to maintain an audit trail of interchanges using this number.</p>	M	NO	9/9
ISA14	I13	<p>Acknowledgement Requested Code sent by the sender to request an interchange acknowledgment. Codes used are</p> <p>0 No Acknowledgment Requested – do not respond with TS997</p> <p>1 Interchange Acknowledgment Requested – respond with TS997 as soon as the transaction is received</p>	M	ID	1/1
ISA15	I14	<p>Test Indicator Code to indicate whether data enclosed by this interchange envelope is test or production. Codes used are</p> <p>T Test Data</p> <p>P Production Data</p>	M	ID	1/1

ISA – Interchange Control Header Data Element Summary					
Ref Des	Data Elem	Name	Attributes		
ISA16	I15	Sub-element Separator This field provides the delimiter used to separate component data structure; this value must be different than the data element separator and the segment terminator.	M	AN	1/1

IEA – Interchange Control Trailer Data Element Summary					
Ref Des	Data Elem	Name	Attributes		
IEA01	I16	Number of Included Functional Groups A count of the number of functional groups included in a transmission.	M	N0	1/5
IEA02	I12	Interchange Control Number This number uniquely identifies the interchange data to the sender. It is assigned by the sender. Together with the sender ID it uniquely identifies the interchange data to the receiver. It is suggested that the sender, receiver, and all third parties be able to maintain an audit trail of interchanges using this number.	M	N0	9/9