Introduction to EDI and EDI Standards

Mike Katona

October 2010

GXS

Objectives

- The objective of this session is to introduce you to **Electronic Data Interchange (or EDI)** and **EDI standards**

- You will learn the **basics of ASC X12** and **EDIFACT**, the two most common EDI standards in use today

- You will understand the **basic structure of an EDI envelope** and how it differs among the most commonly used standards
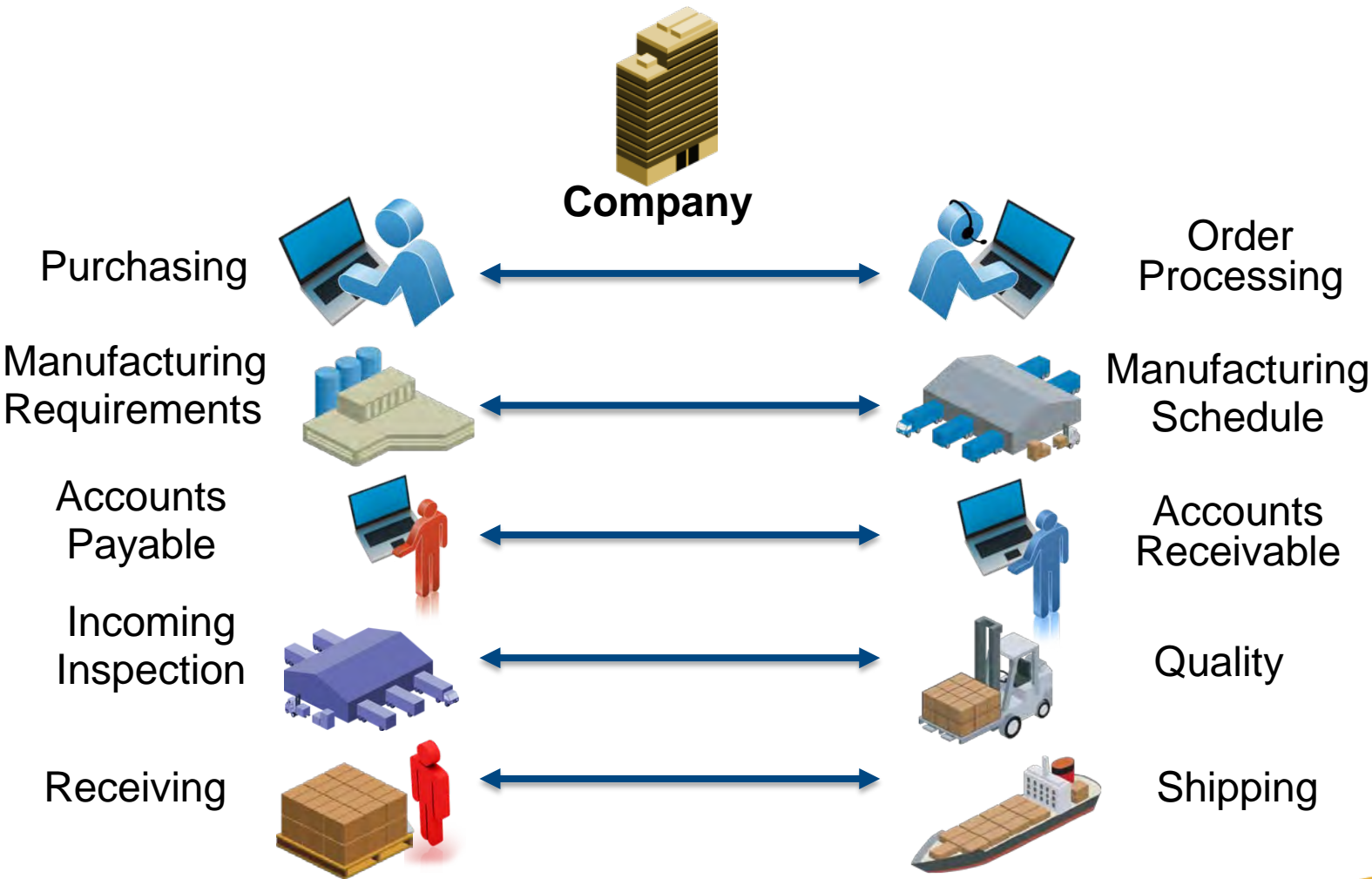
GXS

Who Should Attend?

- Are you brand new to EDI?

- Have you been asked by a Trading Partner to exchange documents with them via EDI?

- Are you aware of EDI, but are still a bit confused by some of the processes and terminology?

- If you answered '**yes**' to any of these questions, then this session is for you!

GXS

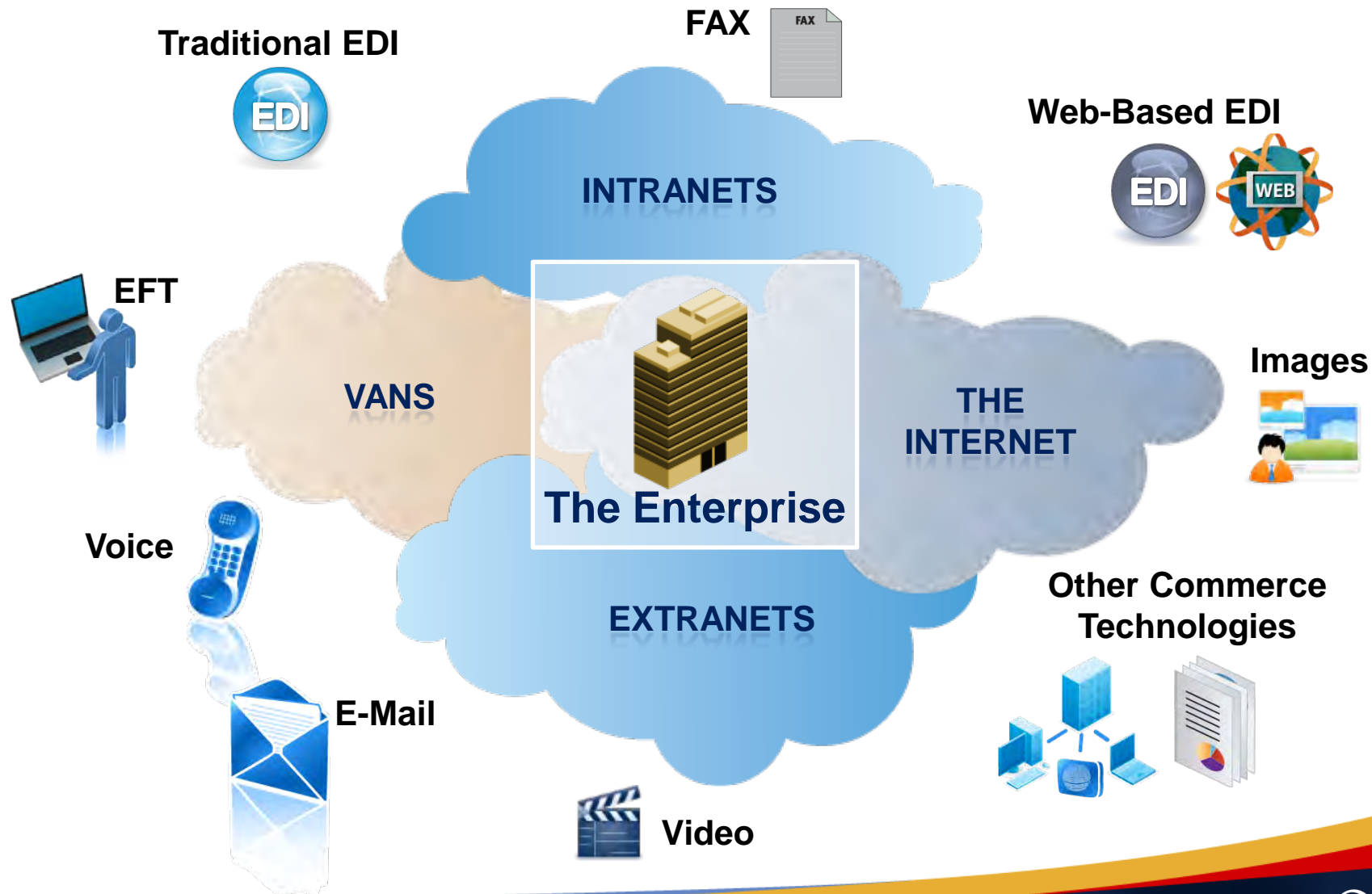# What is EDI?

1960s–1970s Automation within the Company

Company

Purchasing ←→ Order Processing

Manufacturing Requirements ←→ Manufacturing Schedule

Accounts Payable ←→ Accounts Receivable

Incoming Inspection ←→ Quality

Receiving ←→ Shipping

1980s–1990s Extended Enterprise Communication

Employees and Other Divisions

Customers

The Enterprise

Vendors

Trading Partners

GXS

1990s–2000s Electronic Commerce

Traditional EDI

FAX

Web-Based EDI

INTRANETS

EFT

VANS

The Enterprise

THE INTERNET

Images

Voice

EXTRANETS

Other Commerce Technologies

E-Mail
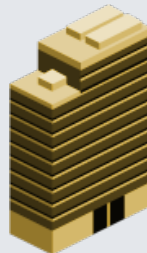
Video

What Is EDI?

Electronic Data Interchange

The process of electronically exchanging business documents in a **standard** format. EDI formally started in the 1960s, but is traceable back as far as the 1948 Berlin Airlift.

Before the advent of the Internet and other technologies, traditional EDI was "*the application-to-application electronic exchange of business documents in a standard format*."

Business Before EDI

OUT

IN

IN

OUT

Mail

Mail

Post Office

Business before EDI

- Paper purchase order business example:
  - **Purchase order data manually keyed into a computer**
  - **Purchase order printed**
  - **Internal mail sent purchase order to various departments for processing**
  - **Copies of purchase order filed in various departments**
  - **Purchase order approved and mailed**
  - **Purchase order delivered by post office**
  - **Data entry personnel for the company receiving the purchase order re-keyed the data**

- Answer these questions:
  - **How long did it take?**
  - **How many hands touched the documents?**
  - **How many times was the data keyed?**
  - **How likely is it that errors occurred?**

GXS

Business With EDI

Electronic Data Interchange

The electronic exchange of business documents in a **standard** format
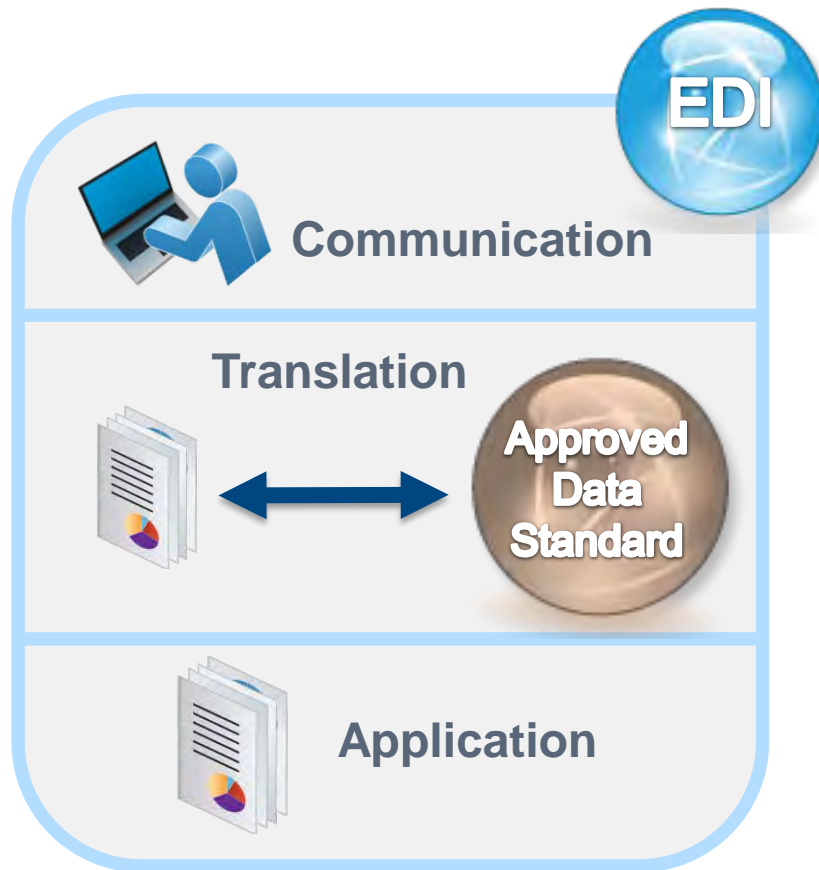
GXS

Business with EDI

- EDI **automates the exchange of standard business data**, regardless of the type of computer, location of the company, or the original application format of the data

- EDI **changes the way you do business**

- EDI **streamlines cumbersome proprietary files** and/or manual paper documents

- EDI **accommodates rapid response** to customer demands

- EDI can be **implemented numerous ways**

- The 1960s offered one standard and one method of doing EDI

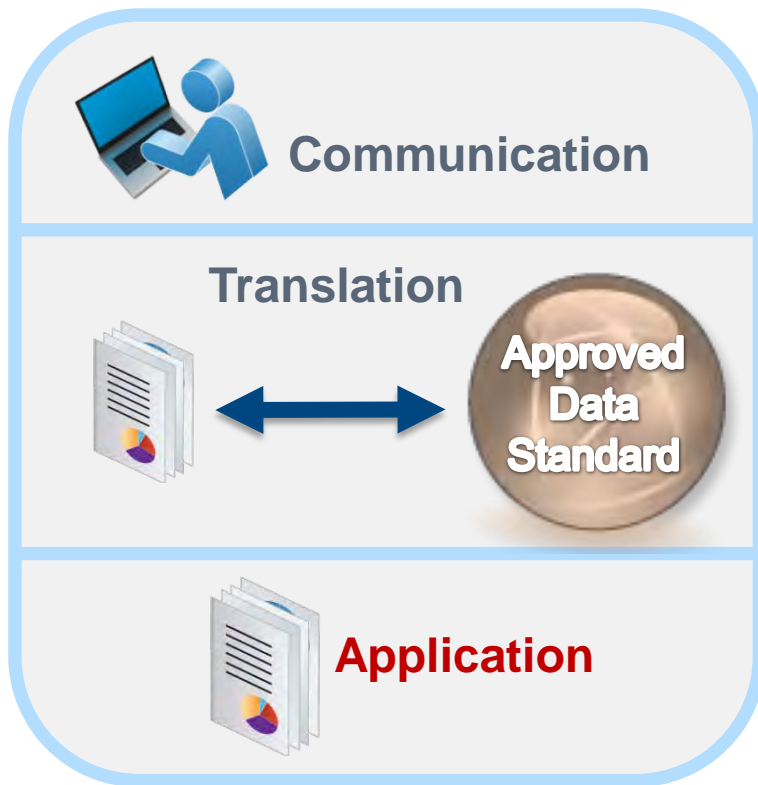- This millennium offers multiple standards and methods of doing EDI

EDI Today

- **Virtually all industries have adopted some form of EDI**
- **300+ documents/transactions exist today**
  - Generic: purchase orders, invoices, power of attorney, project cost reporting, price information, contract abstract
  - Industry-specific: motor carrier rates, student records, tax returns, rail waybill, vehicle shipping order, vessel content details
- **EDI standards and the methods of implementing EDI are rapidly changing to make corrections to the 80/20 rule**
- **Companies want to achieve 100% electronic transaction volumes**

GXS

What Does EDI Involve?

Communication

Translation

Approved Data Standard
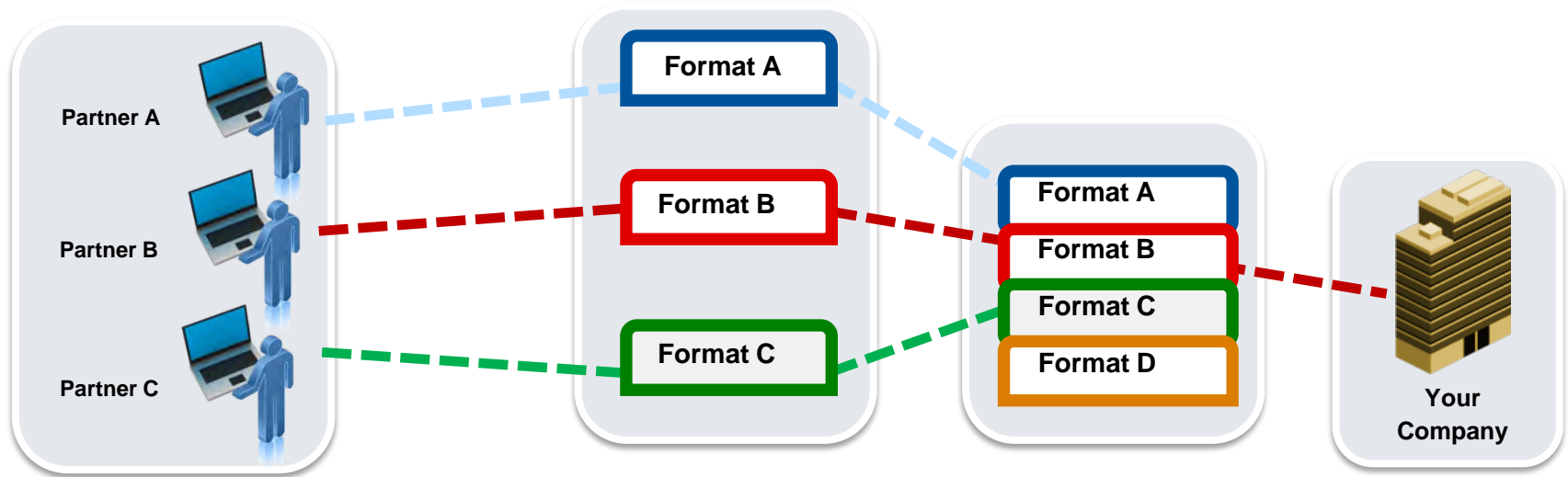
Application

EDI

- **Application**
  - "Business documents"

- **Translator**
  - "Standard format"

- **Communications Vehicle**
  - "Electronic Exchange"

GXS

Application Document Formats

Communication

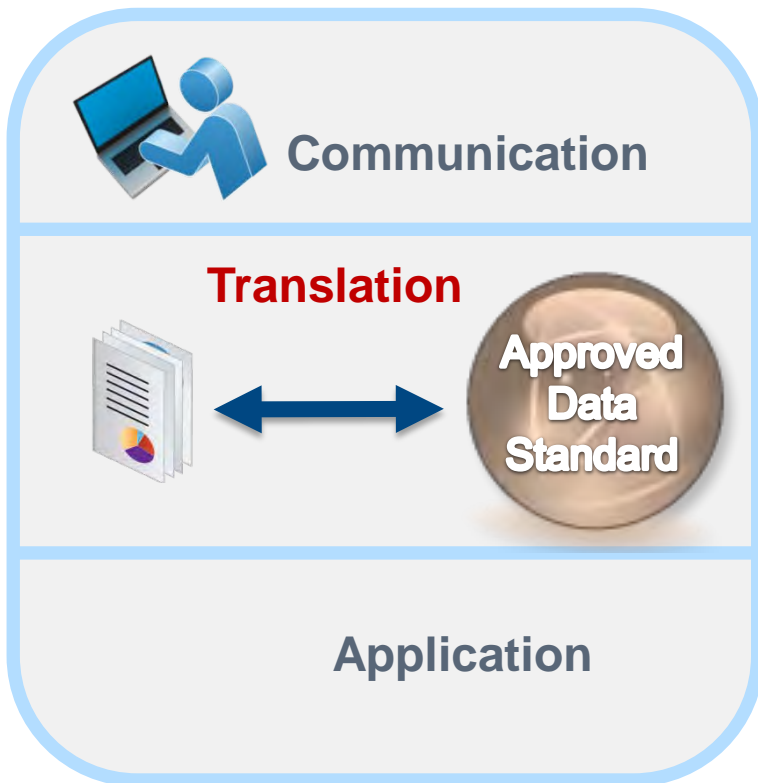Translation

Approved Data Standard

Application

- In the traditional business environment, there are no agreed upon standards for paper documents or file formats

- Applications produce different document formats and require different information

- Locating and interpreting information on different document formats reduces productivity
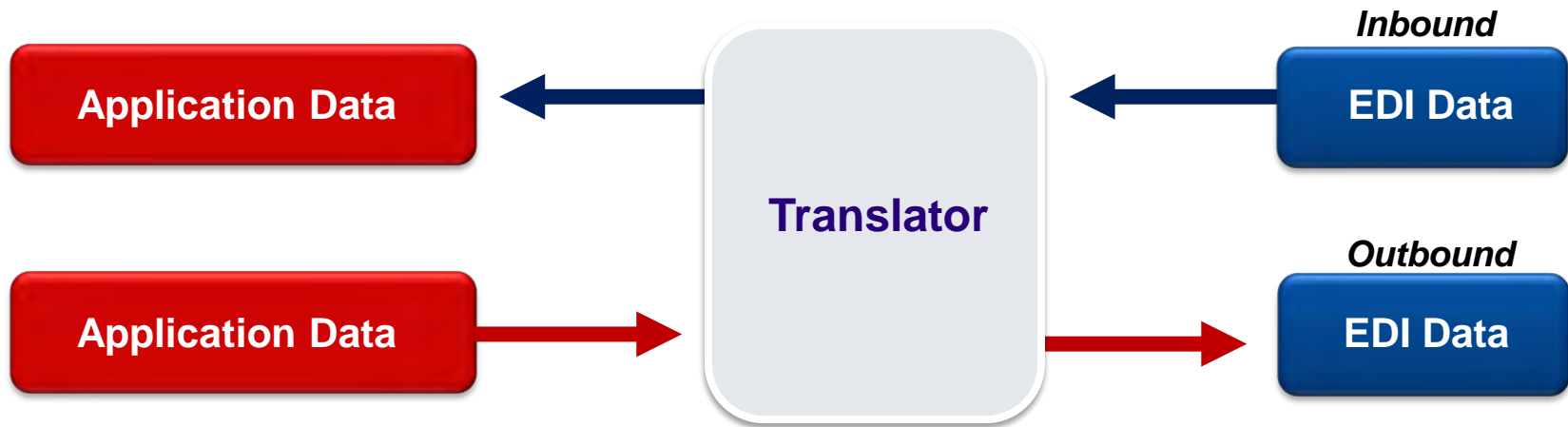
GXS

Multiple Application File Formats

- When computer applications create business documents, the files that generate the documents are in different formats

- Different file formats require the receivers to reformat or translate the file before it can be used in their own systems

- Dealing electronically with many trading partners can be complex

Translation

Communication

Translation

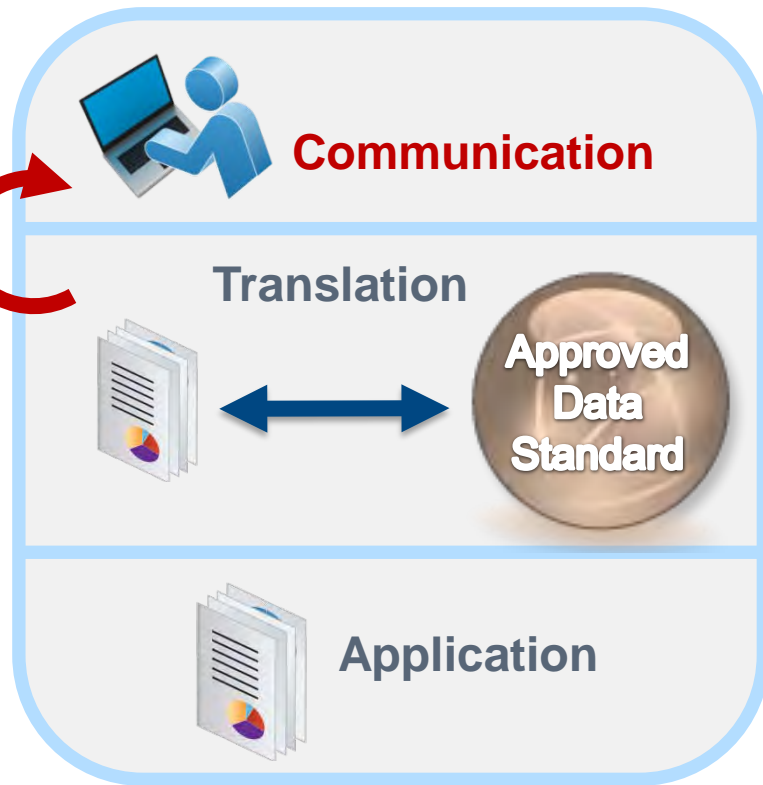Approved Data Standard

Application

- Most companies **purchase or lease translation software**

- Translation software **translates business documents into a common EDI standard** for transmission to a trading partner

- Translation software also **translates EDI standard data into a format suitable for application processing**

- EDI outsourcing services are also available and are beginning to come into wide use; they could become **the dominant method of translation** for companies

Translation Software

Inbound

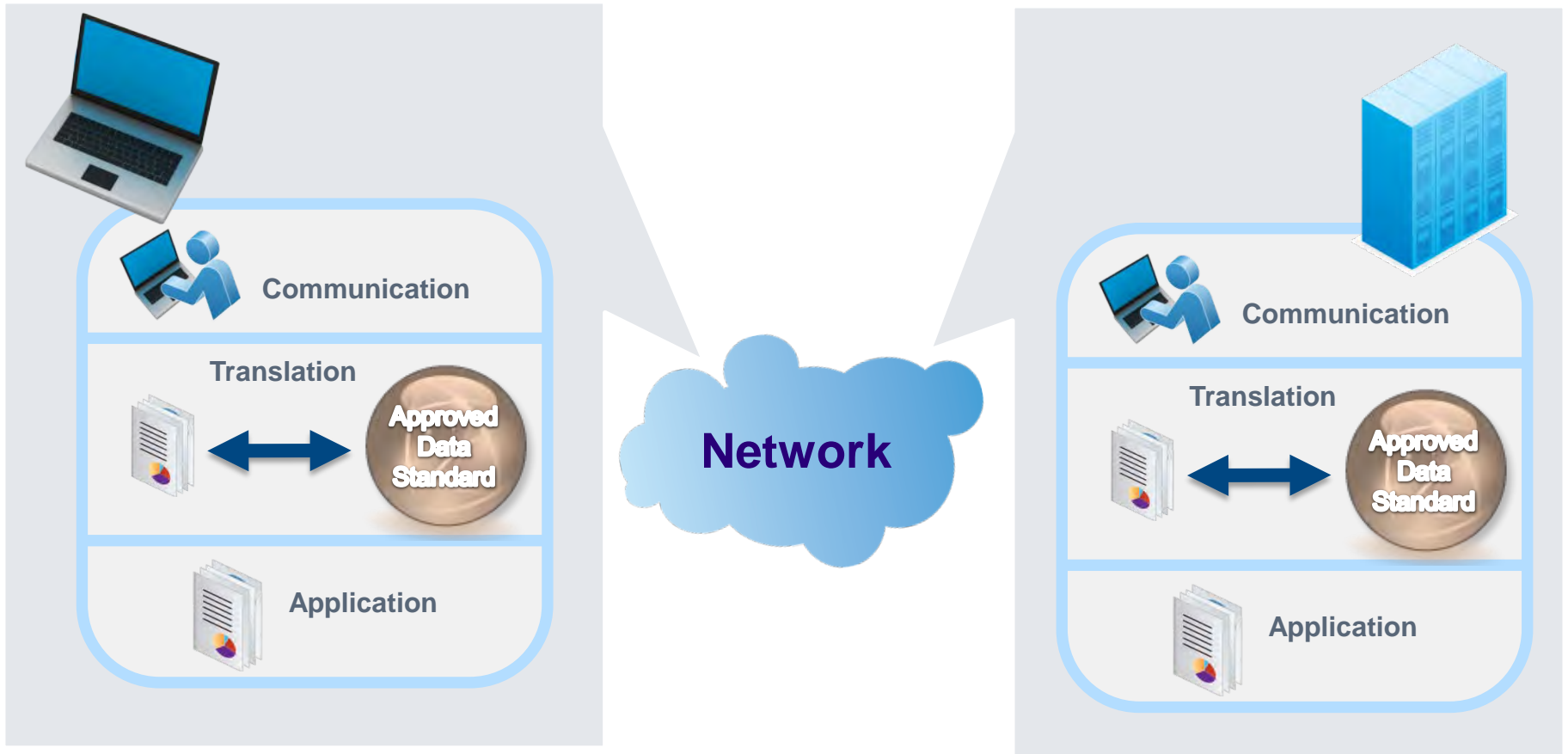| Application Data | ← | **Translator** | ← | EDI Data |

Outbound

Application Data → → EDI Data

- Bi-directional software which converts data to and from the EDI standard formats

- Some translators provide any-to-any translation capabilities

- Translators exist for all platforms (mainframe, mid-range, micro, PC)

GXS

Communications

Communication

Translation

Approved Data Standard

Application

- **Transmission method not addressed by the EDI standards**

- **Alternatives**
  - Value Added Network
  - Point-to-Point (Direct)
  - Proprietary Network
  - Internet Service Provider
  - Combinations of above

- **Some communication products can be tightly coupled with translation**

GXS

Traditional EDI System

Communication

Translation

Approved Data Standard

Application

Network

Communication

Translation

Approved Data Standard

Application

So, What is EDI?

- **EDI is the electronic exchange of business documents in a standard format**

- **EDI is one of many electronic commerce technologies**

- **The overall goal of EDI is to improve business performance**

- **EDI may be implemented using many different methods**

- **The three primary components involved in EDI are:**
  - Application
  - Translator
  - Communication product

EDI Data Standards and Structure

EDI Standards Definition

A usable, well-defined, generic language format that enables organizations to communicate documents without human interpretation or intervention

GXS

Standards Categories

- **Proprietary**

  - Definitions, rules and syntax defined by one organization or industry

  - Difficult to manage when multiple trading partners are involved

  - More complex setup required in translation software or programs must be written to accommodate

- **Generic**

  - Definitions, rules and syntax defined by consensus of many organizations within and across industry groups

  - More manageable when multiple trading partners are involved

  - Well suited for commercial translation software

GXS

EDI Data Diagram

Transaction/Message

Segments

Elements

Transaction/Message

- **One business *document* represented electronically**

- **Made up of segments in sequence as specified by the standards**

- **Begins with a HEADER and ends with a TRAILER**

- **Identified by:**
  - Meaningful name – EDIFACT

  - 3 digit numeric value – ASC X12

GXS

Document Naming Conventions

ASC X12

810 - Invoice

820 - Payment Order/Remittance
      Advice

832 - Price/Sales Catalog

840 - Request for Quotation

850 - Purchase Order

EDIFACT

INVOIC   - Invoice

REMADV - Remittance Advice

PRICAT - Price Catalog

REQOTE - Request for Quote

ORDER   - Purchase Order

GXS

EDI Data Diagram

Transaction/Message

Segments

GXS

Segments

- **Variable length records in a specific sequence as specified by the standards**

- **Made up of elements in sequence as specified by the standards**

- **Begins with:**
  - Tag – EDIFACT
  - Segment Identifier – ASC X12

- **Ends with:**
  - Segment Terminator
  - ASC X12 recommends using the tilde "~"

GXS

Segment Types

- **Segments containing actual data from an application or provided by a user**

  – Data segments

  – Contain data from the application

  – Examples: name, line item, school enrollment information, etc.

- **Segments containing information required for structuring the transmission**

  – Service Segments – EDIFACT

  – Control Segments – ASC X12

  – Examples: addresses, standard in use, test or production data

  – Generated by translation software

EDI Data Diagram

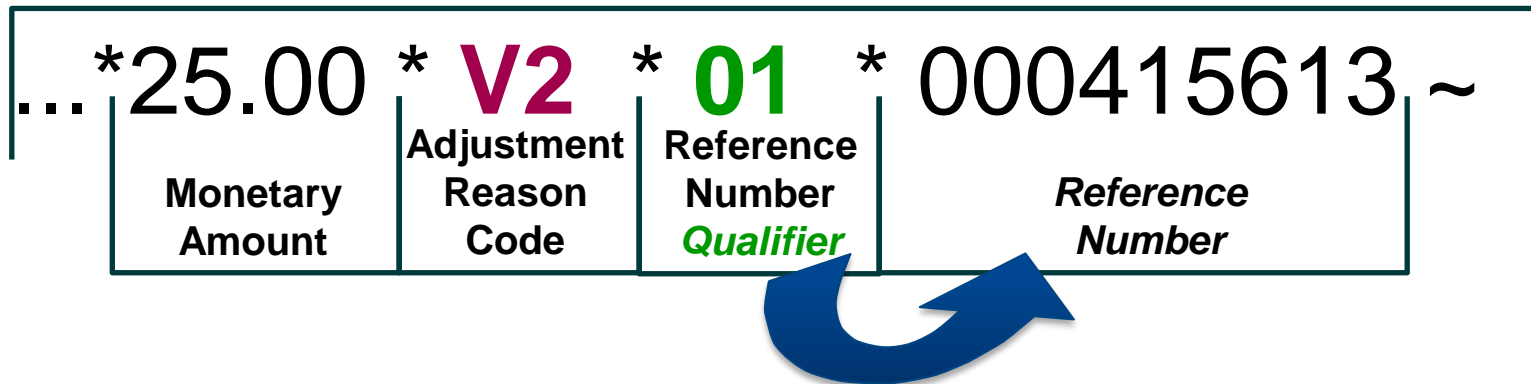Transaction/Message

Segments

Elements

GXS

Data Elements

- **Variable length fields in a specific sequence as specified by the standard**

  - Simple data elements

  - Composite data elements

- **May contain a qualifier or data**

  - Maximum number of elements in a segment should not exceed 24

- **Identified by:**

  - Tag and Name – EDIFACT

  - Element Reference Number and name – ASC X12

GXS

Qualified & ID Type Elements

SEGMENT for Accounts Payable Adjustment

...*25.00 * **V2** * **01** * 000415613~

| Monetary Amount | Adjustment Reason Code | Reference Number *Qualifier* | Reference Number |

- Qualifiers further define and specify how the next element is to be interpreted
- Qualifiers are "ID" data types and come from a list of codes
- Codes are typically provided by standard but may come from other sources
- All "ID" type elements are not qualifiers as in "**V2**" example above
  - VA qualifier indicates the reference number is a Vessel Agent number
  - **01** qualifier indicates the reference number is an ABA Routing number
  - 1A qualifier indicates the reference number is a Blue Cross Provider number

GXS

Record/Field vs. Segment/Element Analogy

Record for Mortgage Closing Data

135000.00	20011231	27000.00	Ed D. Aye
Monetary Amount	Date	Monetary Amount	Name
Field	*Field*	*Field*	*Field*

GXS

Record/Field Translated to Segment/Element

SEGMENT for Mortgage Closing Data

MCD*135000.00*20011231*27000.00*Ed D. Aye ~

Element   *Element*   *Element*   *Element*

MCD = Segment Identifier

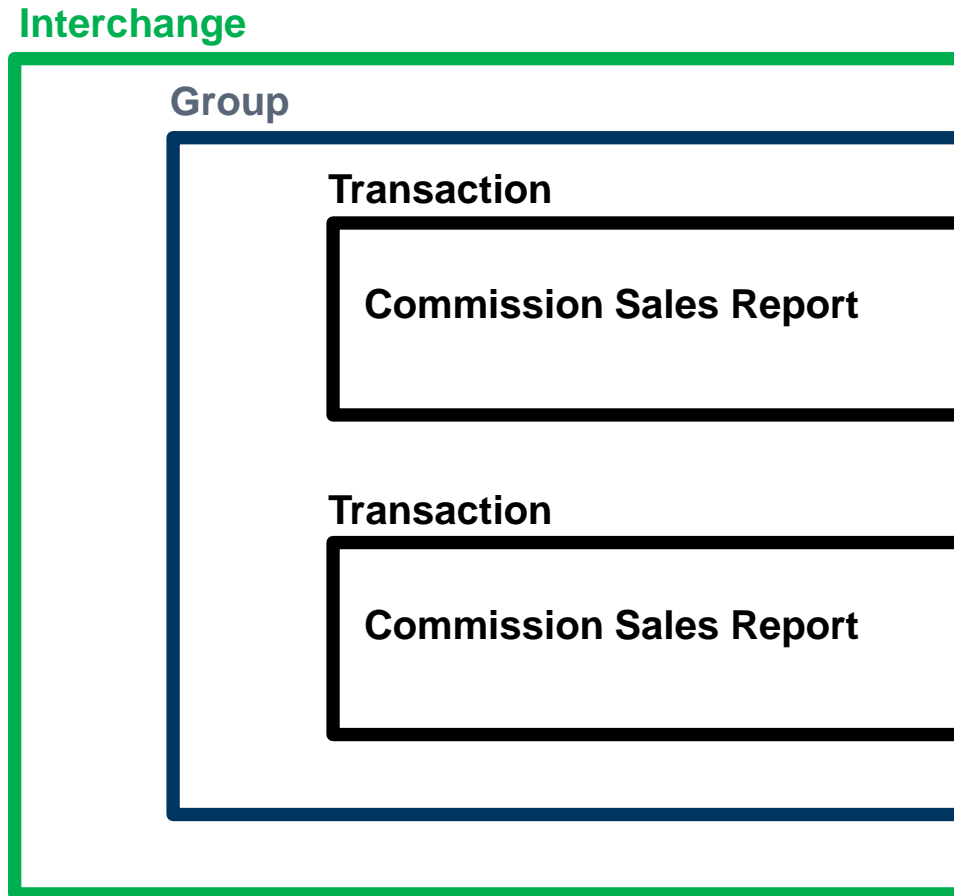***** = Element Separator

~ = Segment Terminator

GXS

Envelopes

- **Transaction/Message envelopes**
  - Contain individual transactions or messages
- **Group envelopes**
  - Contain groups of like transactions or messages
  - (FUNCTIONAL GROUPS)
- **Interchange Envelopes**
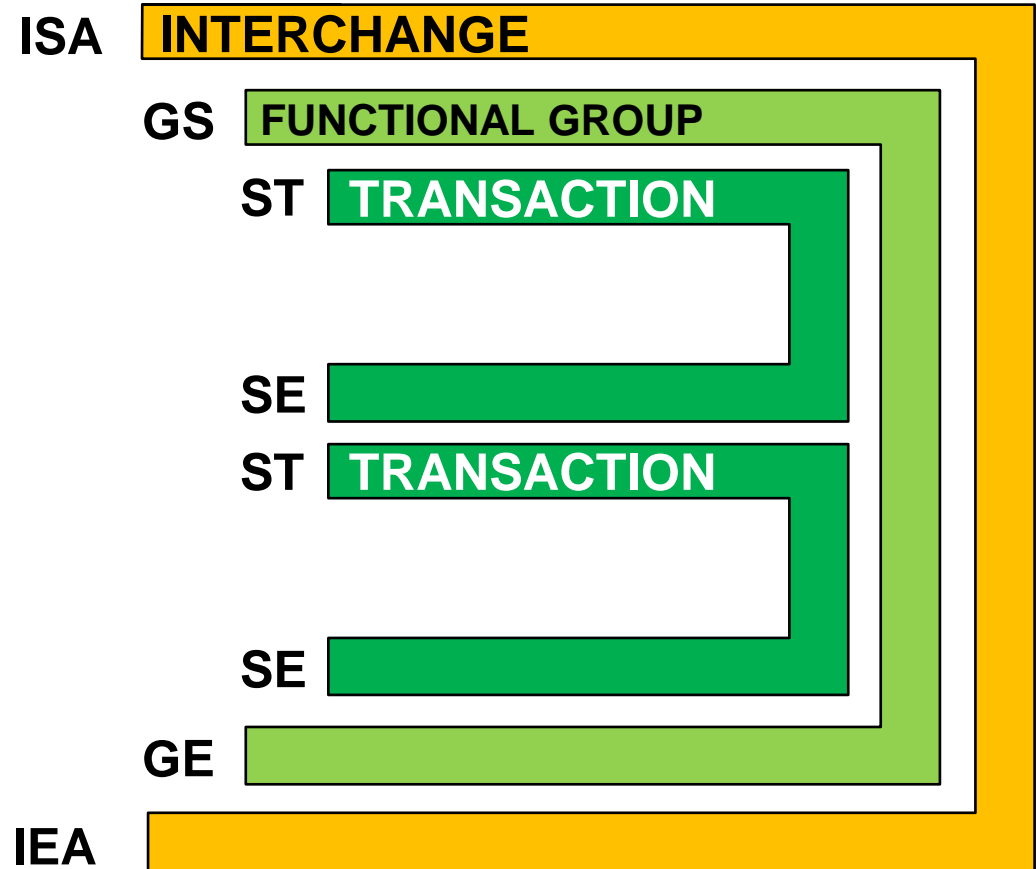 - Contain group(s) of transactions/messages destined for a single receiver

GXS

Typical EDI Envelope

- EDI data is structured in multiple layers of "envelopes" with one envelope level containing one or more additional levels

- The envelope structure varies with the type of EDI data

Interchange

Group

Transaction

Commission Sales Report

Transaction
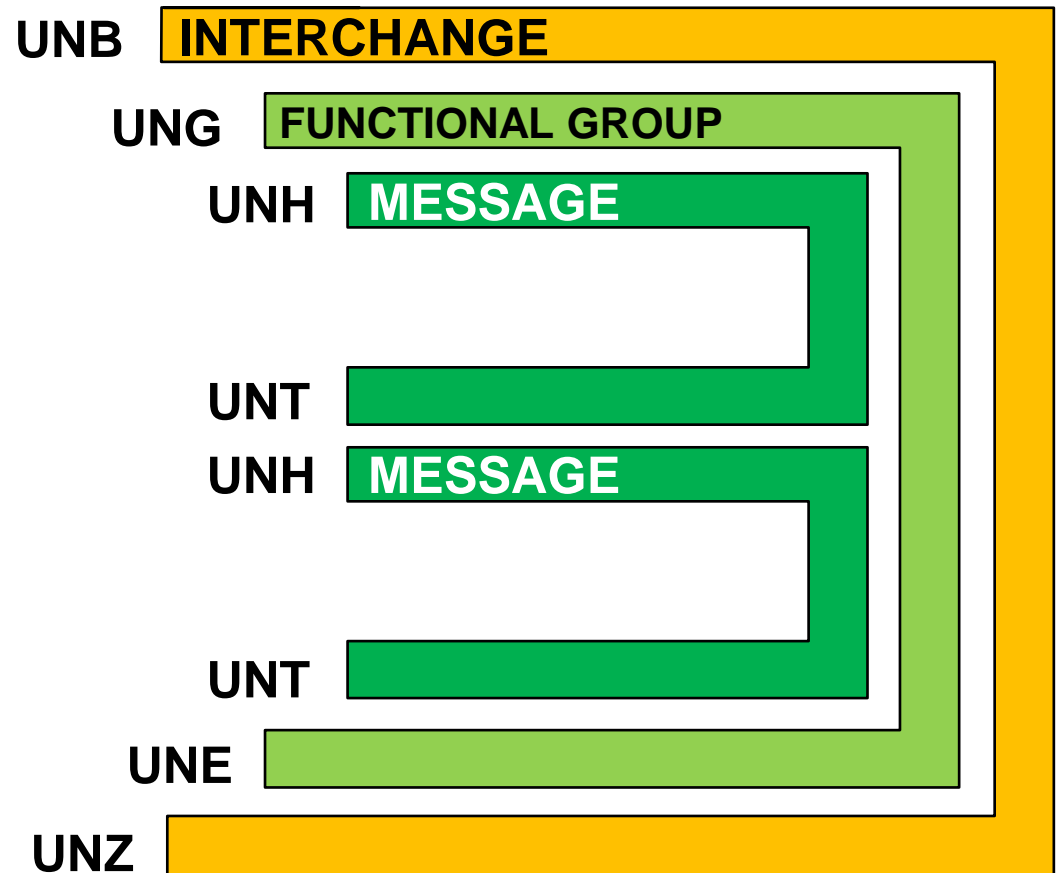
Commission Sales Report

GXS

ASC X12 Envelope Example

- This is an ASC X12 envelope structure, the most commonly used EDI data type in the US.

- When you see EDI data that starts with the characters "ISA" you know you're looking at X12 data

ISA INTERCHANGE

GS FUNCTIONAL GROUP

ST TRANSACTION

SE

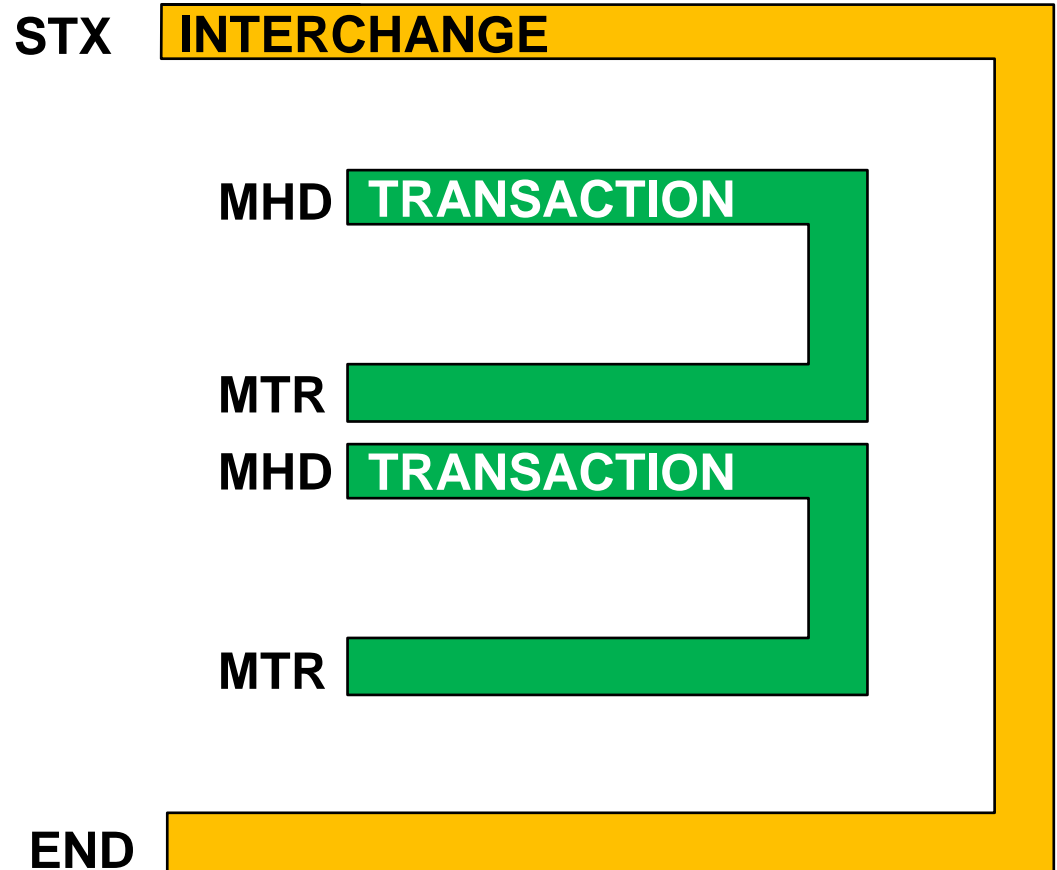**ST** TRANSACTION

SE

GE

IEA

GXS

EDIFACT Envelope Example

- This is an EDIFACT envelope structure, the most commonly used EDI data type outside of the US.

- When you see EDI data that starts with the characters "UNB" you know you're looking at EDIFACT data

UNB INTERCHANGE

UNG FUNCTIONAL GROUP

UNH MESSAGE

UNT

UNH MESSAGE

UNT

UNE

UNZ

GXS

TRADACOMS Envelope Example

- This is a TRADACOMS envelope structure, used primarily in the UK.

- When you see EDI data that starts with the characters "STX" you know you're looking at TRADACOMS data

STX **INTERCHANGE**

MHD **TRANSACTION**

MTR

MHD **TRANSACTION**

MTR

END

GXS

Functional Acknowledgments (FA's)

A **Functional Acknowledgement** (commonly referred to as an FA) is essentially a receipt for a received document

Key points about the FA:

✔ **Provides end-to-end acknowledgment of receipt of a Functional Group**

✔ **Must be coordinated with Trading Partner**

✔ **Receiver's translator generates the acknowledgment**

  GXS

Summary

- EDI standards **define a common language for use** in communicating business documents

- **Several standards exist that are in common use**, including ASC X12, EDIFACT, and TRADACOMS

- **All EDI standards follow similar structures and formatting**

GXS

What's Next?

- **For further EDI and AS2 information**

  - **www.edibasics.com**

  - **www.edi.gxs.com**

  - **www.as2basics.com**

  - **www.gxs.com**

- **Additional EDI training**

  - **EDI 101 and 201**

  - **XML 101**

    - *Instructor led and web based training sessions*

  - For more information on these classes, contact training@gxs.com

GXS

Thank you for attending

GXS Education Services

North America | gxs.com

EMEA | gxs.eu

ASPAC | gxs.asia.com

GXS