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The Global Language of Business

Version 7030

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Business Process Guide for Electronic Data Interchange

US

X12 REQUIREMENTS GROUP

BUSINESS PROCESSES GUIDE
for
ELECTRONIC DATA INTERCHANGE
(EDI)

For Implementation of
UCS, VICS EDI and Industrial Commercial
X12 EDI Guidelines
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This document is a product of the GS1 US X12 Requirements Group (XRG). For more information about the XRG or GS1 US EDI implementation guidelines, contact Steve Rosenberg, Director of Electronic Commerce, at srosenberg@gs1us.org.

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Table of Contents

1 Introduction

This chapter serves as an introduction to the X12 Requirements Group *Business Processes Guide for Electronic Data Interchange.*

1.1 Purpose

The X12 Requirements Group *Business Processes Guide for Electronic Data Interchange* describes relationships among business processes in terms of electronic business messaging that employ the GS1 US UCS (Uniform Communication Standard), VICS EDI (Voluntary Interindustry Commerce Solutions) or I/C (Industrial Commercial) guidelines. It recognizes the different roles an individual may play in commerce, such as buyer, seller, and broker. It describes linkages between business functions (order, payment, etc.) in terms of specific Electronic Data Interchange (EDI) messages. In general terms, it documents the structure and use of EDI messages and suggests steps that organizations may take to implement EDI.

Industry initiatives such as Efficient Consumer Response (ECR) and Efficient Foodservice Response (EFR) outline the relationships of EDI to current business practices. In addition, industry sectors such as Wine & Spirits and Convenience Stores are utilizing EDI to support their best practices.

Several resources have been used in the creation of this Guide, including information previously contained in the UCS, VICS EDI, and Industrial Commercial EDI standards documents.

1.2 Audience

The X12 Requirements Group *Business Processes Guide for Electronic Data Interchange* is available for public use, its primary target audience consisting of UCS, VICS EDI and I/C user member companies of GS1 US. The document is intended to provide information to those individuals supporting the application of electronic business messaging to fulfill the business requirements and information sharing needs in support of specific business practices.

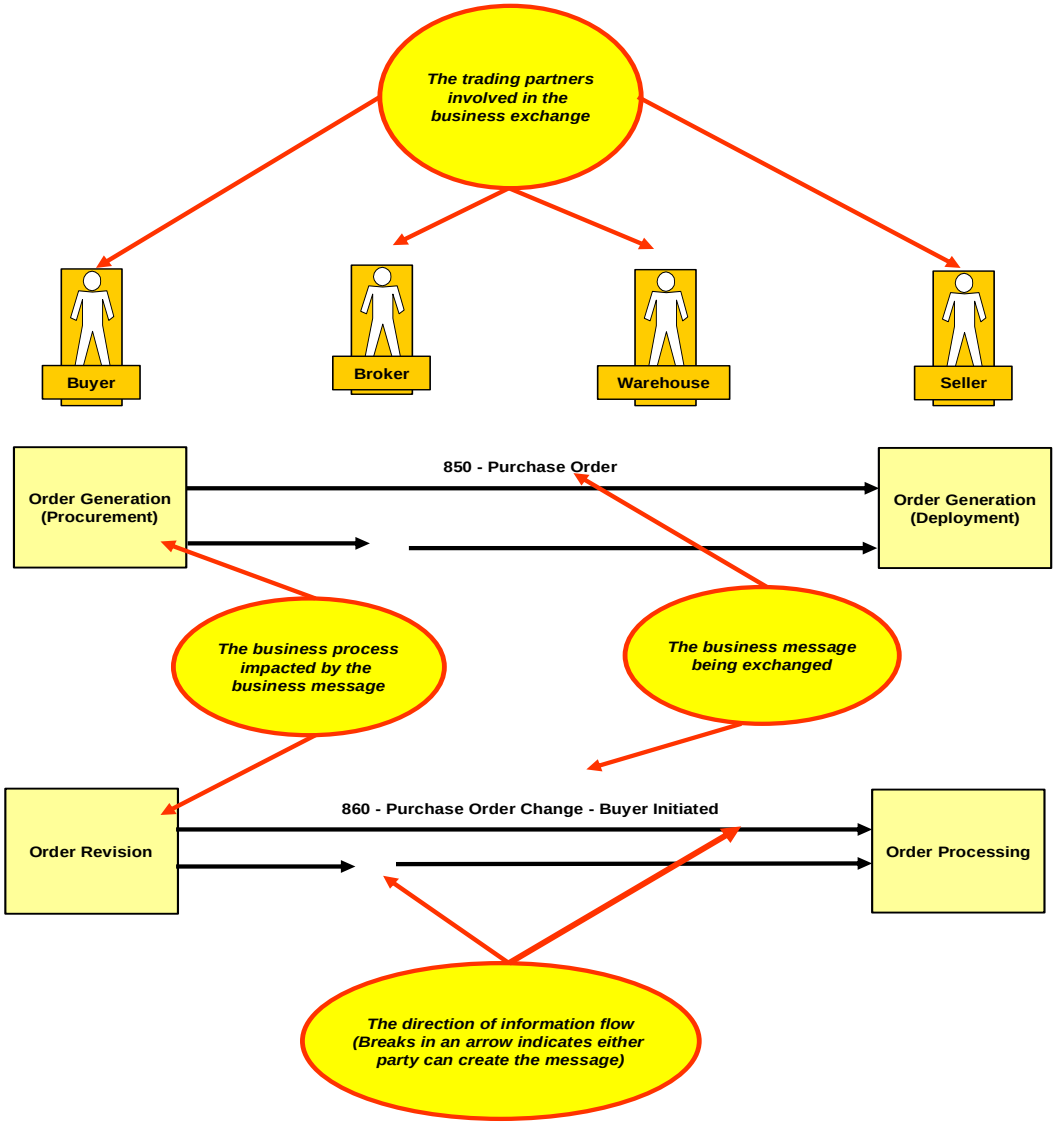
1.3 Document Structure

The Guide consists of four major sections.

Section 2: Basic Business Messaging Flow Models defines the five principal core business processes and definitions involved in the Purchase Order-to-Payment cycle. These core processes are Align Data, Plan, Order, Deliver and Pay. It further examines how these processes are linked through business messaging between seller and buyer. Specific business functions within the core business processes are defined and the business message relationships linking them together are discussed.

Figure 1 – Annotated Messaging Diagram, shows how these business process linkages are identified throughout this Guide. Within each core process, the flow of key messages is shown and the specific message documents for UCS, VICS EDI and I/C are listed.

Figure 1: Annotated Messaging Diagram



Section 3: Enabled Business Practices, applies best practice usage of business messaging, to fulfill specific business practices and objectives that fall outside the normal basic business messaging models. These practices include such things as supplier managed inventories, bailment, direct store delivery and other enabled practices.

Section 4: e-Business Implementation Considerations, focuses on specific topics to be addressed when implementing electronic business messaging. Factors involved in an implementation strategy, such as needed resources (e.g., costs, personnel, systems) and security issues are detailed.

Section 5: X12 Requirements Group Standards Management Process, provides an overview of how standards management is accomplished. The XRG was created to maintain business messaging standards, and standards-based solutions, for North American trade using X12-based technology.

The Guide also includes Appendices, with additional information, and a Glossary of terminology used in the business messaging process.

1.4 Available Technology for Electronic Business Messaging

Today, technology advancements and the global competitive business environment are the primary catalysts for changes in the way companies do business. The creation of the Internet has greatly changed the business landscape, enabling data communication between trade parties at a level previously unavailable.

Electronic business messaging allows trading partners to more quickly and accurately exchange business information in all business processes. Within the GS1 supply chain environment, several types of technology are brought together to bring efficiencies, and accuracy, to global commerce. Those technologies incorporate the ability to communicate on a document-basis, making use of standardized identification numbers for product identification and location identification.

Document-based technology – currently EDI, XML, or some combination of both – use standardized electronic documents (or messages) to communicate business information. Product identification and location identification are also conveyed, usually in the form of alpha-numeric codes, used for carrying out the physical movement of goods and services through the supply chain.

1.4.1 Document-Based Technology

Electronic business messaging is most often carried out via electronic transfer of documents. Historically, EDI has been the most widely used method of communicating business information in an electronic document format.

EDI is the exchange of business data from one computer to another computer using a public standard format. EDI is also the electronic business messaging technique that currently has the most widespread use in the grocery and retail industries. EDI replaces the traditional processes of preparing data in paper form and sending it by mail or by facsimile. Use of EDI is not restricted to any particular computer, software, or communications equipment. EDI bridges the information gap between companies with different computer configurations.

EDI is also independent of a company's internal application systems. It interfaces with application systems rather than being integrated with them. Implementation of EDI requires decisions concerning the choice of computer and communications equipment, the acquisition of translation software, and the development of programs to bridge between internal applications and EDI. This section describes available alternatives and the factors to consider in making these decisions.

EDI supports the transmission of data from one company to another in a specified flow: e.g., a trading partner initiates a purchase order and transmits it to a supplier; the supplier receives the purchase order and returns a confirmation of receipt. Both transmissions travel in a single direction - from the trading partner to the supplier, then from the supplier back to the trading partner.

Typically, the trading partner extracts data from internal application files, and then builds a data file containing the information needed to produce a business document. Translation software uses the data file to generate an EDI transaction set. During this step, most translation software performs editing and validation functions to make sure that:

- data elements required by the standard are present
- data is properly formatted and
- relationships between data elements are valid.

When errors are detected, diagnostic messages describe the errors encountered. Errors are usually corrected by editing the data itself or by making corrections to the extraction process, or both. After the transaction set has been generated in EDI format, it is transmitted to the receiver using one of many communication processes (direct phone link, Value-Added Network (VAN), the Internet, etc.).

At the receiving end, this process is reversed. The incoming EDI data is input to translation software that performs three functions:

- the data is checked for accuracy and completeness in terms of compliance with the EDI standard
- the EDI data is translated into a file for entry into the receiver's application
- the translation software generates an acknowledgment in EDI format for return transmission to the trading partner.

If the receiver's translation software detects any errors in the transmission from the trading partner, the errors will be noted in the acknowledgment. Acknowledgments are formatted, communicated and processed as all other EDI transactions, but they themselves are not acknowledged.

Recently, eXtensible Markup Language (XML) has emerged as a new method of exchanging business information on an electronic document level. Companies interested in XML may find information about the Global Standards Management Process (GSMP) at http://www.GS1us.org.

1.4.2 Product Identification Technology

Product identification is a key component of almost every electronic business message.

Prior to initiating any transmission activity, new trading partners should review their respective item, price and promotion databases to ensure they are in complete agreement on product identification and associated units of measure.

1.4.2.1 Global Trade Item Number (GTIN) and Serialized GTIN (SGTIN)

The Global Trade Item Number (GTIN) is a term used to uniquely identify trade items, products and services. It is a worldwide, recognized, multi-industry standard that is co-managed by GS1 US and GS1 Member Organizations.

The GTIN is required in order to be compliant with GS1 global product identification standards. The 14-digit GTIN is comprised of:

- a one-digit Packaging Indicator (used only with the 14-digit GTIN)
- a GS1, globally unique, assigned Company Prefix
- a manufacturer/supplier/brand owner assigned item/product reference number
- a one-digit check digit.

There are four data structures for GTIN. They are:

- GTIN-12 12-digit number
- GTIN-8 8-digit number
- GTIN-13 13-digit number
- GTIN-14 14-digit number.

A GTIN may represent any trade item – a consumer unit, a case, a pallet, etc. The information that is maintained in back-end databases provides the descriptive details about the product. As part of a global initiative, companies have been urged to upgrade their data systems to accept, transmit and store 14-digit product identification numbers.

In ASC X12 EDI, the four data structures are identified by the following EDI Qualifier Code Values, in Data Element 235:

Data Structure	EDI Qualifier
• GTIN-12	UP
• GTIN-8	EO
• GTIN-13	EN
• GTIN-14	UK

A GTIN represents an object class, such as a manufacturer's model of DVD player. Thousands of that model of DVD player may be manufactured. To differentiate one DVD player from another of that specific model, a serial number may be assigned, by the manufacturer, to each 'instance' of that model. The combination of GTIN with serial number creates the **SGTIN**. SGTIN is used within the Electronic Product Code /Radio Frequency Identification technology (EPCIS).

When referencing the SGTIN, the serial number portion is equivalent to the Application Identifier 21 Serial Number (AI 21) used within the GS1 barcode technology (GS1-128, DataMatrix, and GS1 Databar). Additionally, the serial number value, within X12 EDI, is typically carried in a REF segment using data element 128 (Reference Identification Qualifier) with a code value of 'SE'.

1.4.3 Location Identification Technology

Within any business environment, knowing your trade party is crucial, as is maintaining up-to-date name and address information. Since language may be imprecise, a universal customer/vendor identification code is critical to the success of the business messaging.

1.4.3.1 The DUNS Number

Historically, the DUNS Number has been used as a vendor identification Code. It is defined as follows:

9-Character DUNS Number + 4-Character User Suffix = 13-Character vendor identifier

The owner of the DUNS number controls the 13-character ID code. Each company tells their trading partners what code number to use to identify a specific division, plant, warehouse or other location. Every company must have a Universal Customer/Vendor ID number for each "physical ship-to" location and should have one for each organization address. Many companies already have a DUNS number, and some have multiple DUNS numbers for different divisions and/or locations.

The Department of Defense also maintains its own unique identifier – DODAAC. The DODAAC (Department of Defense Activity Address Code) may be used in transmissions with military trading partners.

1.4.3.2 The Global Location Number (GLN)

From a supply chain perspective, the ability to discretely identify locations within a supply chain is critical to its efficiency and success. To that end, another one of the global identification numbers managed by the GS1 US and GS1 Member Organizations, and now being implemented world-wide, is the Global Location Number (GLN).

The Global Location Number is built upon the standards promulgated by the GS1 System. The GLN is a globally unique location identifier. It ensures that a trade party has a unique address - worldwide.

The GLN provides a means to identify legal entities, trading parties, and locations to support the requirements of electronic commerce (B2B and B2C). The GLN is designed to improve the efficiency of integrated logistics by removing ambiguity and contribute added value to the trade partners involved, as well as to consumers.

The GLN is a 13-digit number used to uniquely identify any legal, functional or physical entity. Its basic components are:

- An GS1 assigned, globally unique, Company Prefix
- A Location Reference
- A Check digit.

A company that does not have a need for a GS1 Company Prefix may obtain a 13-digit GLN from GS1 US. The GLN is replacing other identifiers as the primary identifier in X12 EDI and GS1 XML messaging.

1.5 Benefit Summary

Business messaging is a vital tool available to every business for increasing efficiency and productivity through the electronic exchange of inter-company and intra-company data. As the paradigm for standards management relies heavily on business modeling to establish the operating foundations for business messaging transactions, it should not be viewed as a strictly technical activity. For business messaging to be successful, corporate policies and procedures need to be examined as current functional procedures may require revision, especially as new business relationships are established and managed.

This guide shows how business messaging links business functions together to support the processes at work within and between trading partners. The guide provides the business messaging novice and the business end users with clear illustrations of how available business messaging standards, such as UCS, VICS EDI and I/C, can be leveraged to manage the core business processes of Align Data, Plan, Order, Deliver and Pay.

Companies implementing business messaging for the first time and companies expanding business messaging processing must quantify their own benefits. The following pages provide a guideline and checklist for benefits. The applicability of benefits and their importance will vary from company to company. Likewise, benefits will vary depending on whether a company is a buyer, seller, broker, warehouse or other trade party.

The following material pertains to the direct benefits that can be achieved using business messaging. However, business messaging may provide other indirect benefits, such as the opportunity to obtain useful planning and control information on an automated basis.

Business messaging can be used to enhance productivity by reducing costs. It can reduce inventory-carrying costs, improve inventory turns, help control storage and handling cost, significantly reduce administrative and clerical time, and improve data accuracy and reduce errors. Business messaging allows companies to synchronize their databases, reducing discrepancies between them and improving their business communications.

1.5.1 Reduced Lead Time

Business messaging can provide a direct benefit in the ordering cycle in such areas as:

- Reduced inventory levels
- Inventory cost reductions
- Increased inventory turns
- Better use of warehouse space
- More accurate inventory projections
- Fewer out-of-stock conditions
- Fewer emergency situations
- Lower freight costs.

1.5.2 Warehouse Efficiencies

Business messaging can provide important benefits in warehousing operations, such as:

- Improved planning for shipping and receiving
- Lower warehousing costs
- Lower freight costs
- More efficient use of personnel
- More efficient use of dock space.

1.5.3 Accounting Efficiencies

Business messaging can provide benefits to the accounting function, such as:

- Reduced invoice discrepancies
- Reduced paper
- Less time spent reconciling differences
- Reduced credit/debit adjustments
- Reduced administrative costs
- Reduced proof of delivery problems
- Reduced time to process invoices
- Timely and accurate financial data
- Reduced payment delays.

1.5.4 Transaction Accuracy

The automated procedures associated with business messaging can reduce errors and eliminate or reduce the costs associated with correcting errors. Some examples are:

- Less time spent in reconciling differences and errors
- Preparation of fewer invoice adjustments
- Fewer back order situations
- Fewer product returns.

1.5.5 Increased Productivity

Business messaging provides the opportunity for productivity improvements by reducing the administrative and clerical time. Some examples are:

- Reduction of clerical time in the merchandising and sales departments
- Better buying decisions
- More productive use of sales personnel time to present business opportunities
- Less time spent resolving order and invoice discrepancies and disputes
- Better order status information
- Increased opportunities for alternative buying
- Improved DSD (Direct Store Delivery) delivery/receiving process.

1.5.6 Administrative and Clerical Costs

Business messaging can substantially improve productivity and direct cost savings by reducing or eliminating the time required in traditional paper-based systems. Some affected areas are:

- Document editing and checking
- Document filing and retrieval
- Document matching
- Manual document preparation
- Key entry for computer input.

1.6 Terminology

The glossary, contained in the Appendices to this Guide, presents relevant terms used in support of EDI enabled processes.

2 Basic Business Messaging Flow Models

This chapter presents the five core business processes supported through electronic business messaging. These processes are Align Data, Plan, Order, Deliver and Pay. The business messages within UCS, VCS EDI, and I/C EDI guidelines link specific business functions in these processes together between the buyer, the seller and their associated trading partners.

In the sections that follow, each core process is closely examined. The process is defined, as are all the specific business functions that comprise the overall process. Key data message flow is depicted and the specific message documents are discussed to show how they transfer vital information between sellers and buyers.

2.1 Align Data

Align Data encompasses the business activities required to achieve and maintain ongoing alignment or synchronization of the various database master files used between trading partners. The primary goal is to ensure that all parties have a clear, concise identification and understanding of the products or services under consideration.

Electronic messaging allows for data alignment related to trading partner locations, product identification, product attributes, product pricing and product promotional information. This includes product imaging and other graphic data as well. Data alignment is the fundamental step to achieving the trading objectives within the other core business processes. It should be one of the earliest trading objectives between partners conducting business with each other and through any third party support entities, such as brokers and warehouses.

The GTIN and GLN are the primary identification numbers used in data alignment.

To go beyond the one-to-one relationships that historically have existed between trade parties and migrate to a collaborative supply chain environment – making use of the newest technology tools available such as the Internet - the process of 'data synchronization' evolved. Instead of peer-to-peer file transmissions, a central registry - accessed through a secured interface - maintains 'pointers' to certified data pools which house information about the products and trade parties. Using the GTIN and GLN as primary keys within this Global Data Synchronization Network, suppliers/sellers can register (and maintain) information about products, services, and themselves using this federation of certified, interconnected data pools, which accesses the GS1 Registry. Additionally, buyers/operators/retailers can also access the GS1 Registry through the data pools to locate information about products and services.

2.1.1 Align Data Business Functions

Proper data alignment enables a number of business functions within each trading partner. **Figures 2A and 2A-1 – Align Data Basic Business Model**, illustrates the business functions linked through business messages. These business functions include:

- Trading Partner Specification Support
- Product Specification Support
- Pricing Support
- Promotion Support

Figure 2A: Align Data Basic Business Model

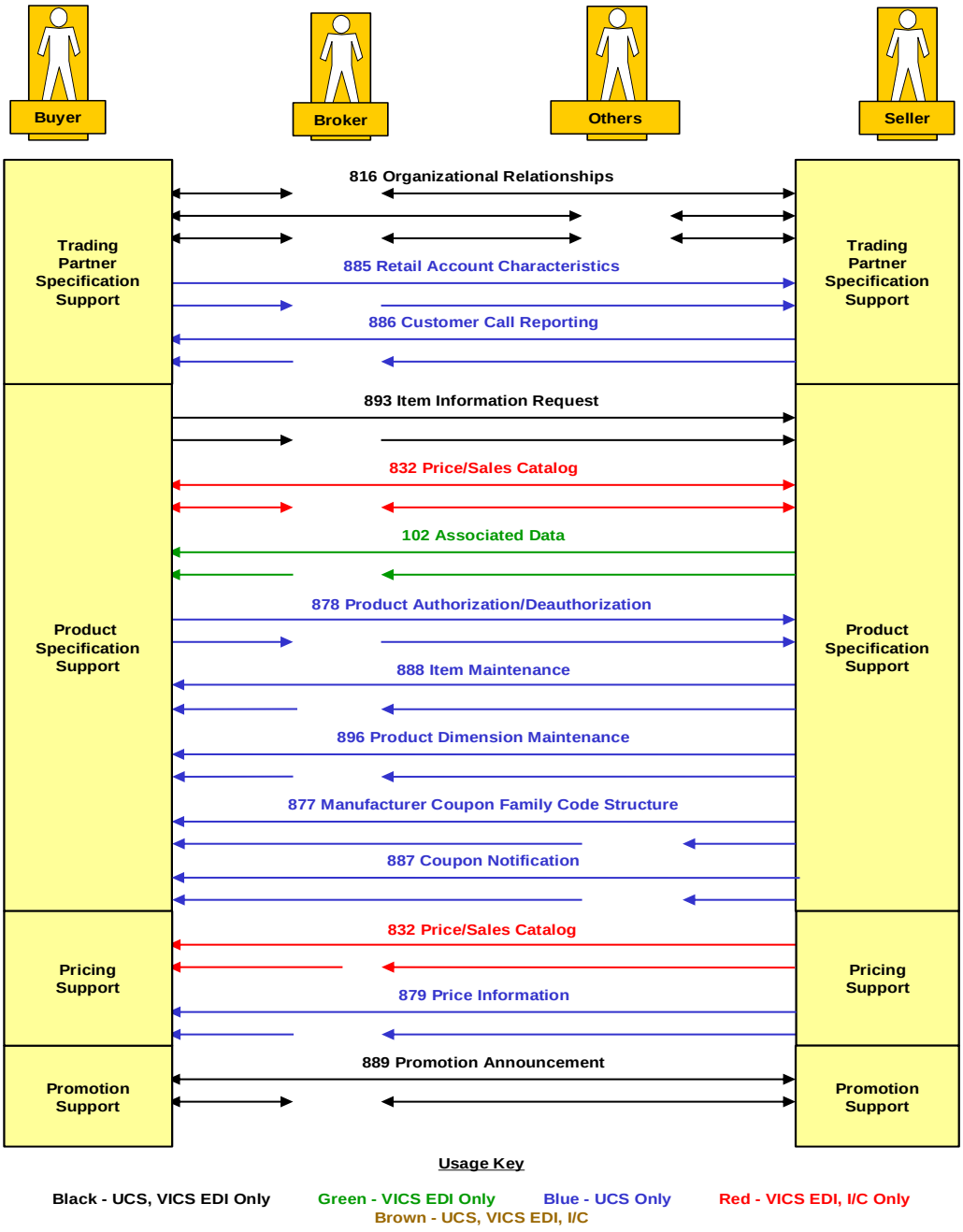
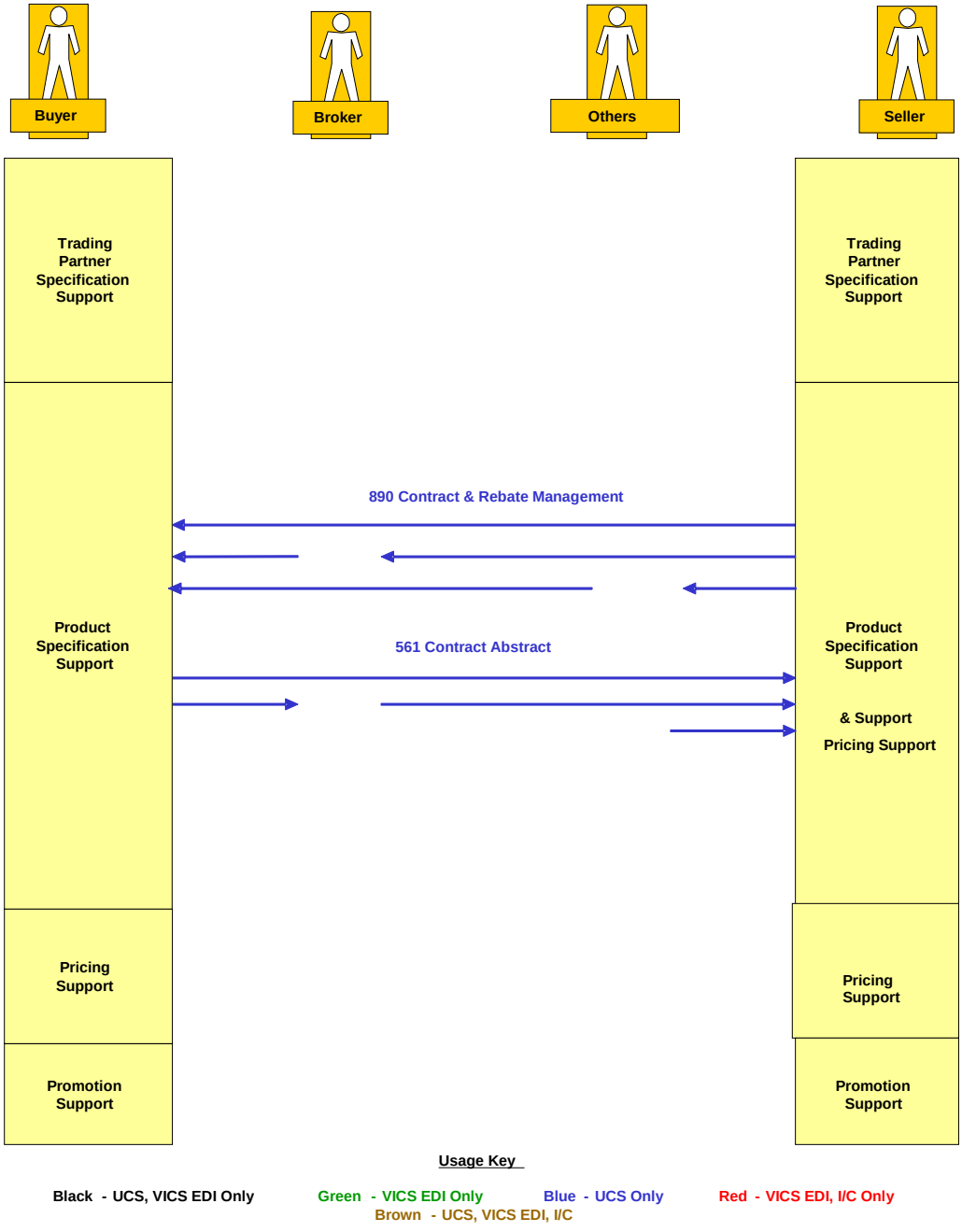


Figure 2A-1: Align Data Basic Business Model



2.1.1.1 Trading Partner Specification Support

Trading Partner Specification Support describes business activities and applications used to maintain detailed information regarding trading partners and their locations. Characteristics encompassed in these applications and activities include location identification, addresses, key contact names and trading partner call reporting. Similar seller information can be traded that identifies plant and warehouse numbers.

2.1.1.2 Product Specification Support

Product Specification Support includes the business activities and applications necessary to maintain detailed physical product characteristics, such as weight, consumer packs/case, U.P.C. product identifier, coupon family codes and similar attribute information in support of sell and buy functions. It includes marketing information. This business function also includes processes related to product availability and authorization.

2.1.1.3 Pricing Support

Pricing Support describes the activities and applications used to establish and maintain accurate price records between trading partners.

2.1.1.4 Promotion Support

Promotion Support describes the activities and applications used by trading partners to establish and maintain promotional data about products being sold and purchased within the partnership. This includes promotional allowances for products, including effective dates and any performance requirements that must be met to earn the traded discount information.

2.1.2 Align Data Business Messages

2.1.2.1 Associated Data (102)

The **Associated Data (102)** message is used by a supplier or merchandiser to convey multi-media objects, such as a product image and its associated audio in a trading partnership using VICS EDI. The **Price/Sales Catalog (832)** is usually sent along with the **Associated Data (102)** to provide product information and specify the associated object reference ID. This ID links the actual multi-media object in the **Associated Data (102)** to the item and the multi-media object attributes in the **Price/Sales Catalog (832).**

This message provides the trading partners with the following benefits:

- It allows audio and image data to be associated with a product.
- It automates the transfer and loading of multi-media objects to a database.

This message is not used in the UCS or I/C based trading partnerships.

2.1.2.2 Contract Abstract (561)

The **Contract Abstract (561)** bi-drectional message includes the information necessary to administer a contract, including modifications and corrections to that contract, and provides an acknowledgment mechanism to enable management of the contract administration process. The document may be used within the Foodservice industry to respond to a **Contract and Rebate Management (890)** message that carries contract information pertaining to products and services, and their pricing, that are offered amongst suppliers, distributors and operators. This message is used in UCS.

2.1.2.3 Organizational Relationships (816)

The **Organizational Relationships (816)** message is used to convey location address information for a company, maintain location address information through periodic updates and convey location relationships (e.g., the relationship between a buying location and its related bill-to, ship-to and mark-for locations). It allows the sending partner to communicate company specific information such as name, address and contact data. This message also sets up the organizational structure for defining the relationship between companies and division locations. The **Organizational Relationships (816)** message provides entities such as reclamation centers with vendor specific information such as name and address for reclamation.

This message provides trading partners with several benefits:

- It eliminates the need to send address information on purchase orders and other electronic business messages
- It provides advance notification to the supplier of changes in location information
- It eliminates the manual process of sending updates to trading partners and ensures updates reach partners on a timely basis
- It allows the receiving partner the ability to automate vendor or customer information file maintenance
- It promotes the use of code values for location identification within other EDI business messages, thus increasing the accuracy and usability of those documents.

The **Organizational Relationships (816)** business message is used within UCS and VICS EDI guidelines. It is not supported in the I/C guidelines.

2.1.2.4 Price/Sales Catalog (832)

Suppliers can notify potential buyers of their product line, expected product introduction and discontinuation dates using the **Price/Sales Catalog (832**) business message. The **Price/Sales Catalog (832)** may be sent from a supplier to a buyer in order to provide a buyer with information regarding products available from that supplier. It is not a one-time response to a buyer's request for information. It is intended to serve as an update to a standing database of supplier product information, and as such, may be created by the supplier whenever its product line changes. By maintaining a current, accurate database of a supplier's available products, the ordering process will be more efficient and error-free.

While this transaction can be sent from a supplier directly to a buyer, the most efficient use of this message involves a third-party catalog provider that serves as a central database for a supplier's product catalog. In this scenario, a supplier initially establishes its current product line with the third-party catalog. The supplier authorizes customer access to all or portions of its catalog entries. Buyers can access updated catalog information for all suppliers subscribing to the third-party catalog provider. As suppliers add, change, or delete items from their product lines, they send **Price/Sales Catalog (832)** messages to the third-party catalog to reflect these changes. The third-party catalog updates the standing database and can broadcast these changes to the appropriate buyers using the **Price/Sales Catalog (832**). The buyer can also send this transaction to a third-party catalog provider or supplier to request specific product information (e.g., all setup information for items with a certain style identifier).

Information commonly found in the **Price/Sales Catalog (832)** message includes:

- GTIN numbers for the supplier' s products
- Supplier's identifier for the product, e.g., style
- National Retail Federation (NRF) size code and size description
- NRF color code and color description
- Price
- Discontinue dates, if known.

The **Associated Data (102)** business message is often used in conjunction with the **Price/Sales Catalog (832)**, to transmit multi-media objects such as images and audio file data. There are a number of benefits associated with trading this business message:

- It provides ready access to supplier products and product line information.
- It allows the buyer to determine the most favorable product pricing.
- It facilitates evaluation of a supplier's product line, new product line extensions or new product introductions.
- It ensures consistent trade item identification using the GTIN, providing the supplier and the buyer with a common item identification system that can be scanned. If this GTIN is used by both partners as their only means of product identification, the need for labor intensive maintenance of item cross reference tables is greatly reduced or eliminated., providing a more cost effective method of conducting business.

The **Price/Sales Catalog (832)** message is included in the VICS EDI and I/C guidelines as well as in GS1 Canadian Healthcare guidelines. The grocery industry predominantly uses the UCS guidelines and trades this information under business messages described later in this section.

2.1.2.5 Manufacturer Coupon Family Code Structure (877)

The seller or seller's agent communicates the coupon family code structure or changes to the structure using the **Manufacturer Coupon Family Code Structure (877)** business message. A third party may gather all of the seller's coupon family code information to send to the buyer or buyer's agent, or the seller or seller's agent may communicate coupon family code information directly to the buyer or buyer's agent. Coupon family code structures enable the automation of coupon scanning, validation and proof of purchase at point of sale.

The principal benefit of this message is to ensure data synchronization exists between the seller, buyer and their varied coupon processing agents. Use of this business message automates an otherwise cumbersome and maintenance intensive business activity.

The **Manufacturer Coupon Family Code Structure (877)** message is included only in the UCS guidelines, to support the heavy use of coupons in the grocery industry.

This message is used in UCS.

2.1.2.6 Product Authorization/Deauthorization (878)

The **Product Authorization/Deauthorization (878)** message is used by the buyer to notify the seller of product authorized to be delivered to a warehouse, individual store or group of stores. The message is arranged by product. For each product, the buyer specifies whether the product is authorized or de-authorized, defines pre-price or retail price information, and lists the stores or group of stores that are affected by the action. This message has been designed to be self-contained; that is, store groups referenced at the line item level are defined at the header level.

This message is used in the UCS guidelines in conjunction with other messages to provide the same functionality as contained in the **Price/Sales Catalog (832)** message. It provides a benefit to the buyer and seller by eliminating the need for manual communication to notify each other of authorization or de-authorization activities and further facilitates integrated application update.

2.1.2.7 Price Information (879)

The **Price Information (879)** message, in conjunction with other messages, has been used within the grocery industry to reduce invoice deductions by providing the broker and seller with a mechanism to synchronize the buyer's pricing and product information with their own pricing and product information. The publication, *Invoice*

Deductions Guidelines: Report of the Joint Industry Committee, contains valuable background information on this topic.

The **Price Information (879)** message includes relevant price information and is generally sent at the same time as the **Item Maintenance (888)** message; i.e. when setting-up a new product. When product information has been previously established in a buyer's system, price changes are maintained using the **Price Information (879)** message. The **Price Information (879)** message expresses prices based on seller-defined parameters. It can also be sent as a complete file refresh. Each new price will override the previous price. To ensure accuracy, the buyer must apply price changes in the order in which they are generated by the seller or broker.

This message can also be initiated by either the buyer or the seller to provide a reclamation center with price information. In this process, the **Price Information (879)** message is periodically sent only as a complete file refresh to the reclamation center.

This message also allows the seller or broker to define price protection conditions, when applicable, on the price setup or change. It allows them to specify the geographic price areas to which the new or changed price applies as well as establishing a new price or price change effective date, and define or change the ordering requirements for a bracket price when multiple prices apply to a product. Bracket prices apply to products based on ordering volumes or other parameters. For example, the seller's best price for a product might be available only when a buyer orders a truckload in full pallet quantities.

Freight charges or credits may be included in the **Price Information (879)** message for a given product. This is used when products are priced FOB plus freight or delivered less freight.

Using the **Price Information (879)** message affords trading partners a host of benefits around one of the most difficult areas of ongoing data alignment. In short, the message provides:

- An integrated process for pricing setup and maintenance.
- Significant opportunity to improve invoice matching rates and to reduce invoice deductions.
- The ability to manage accurate pricing information with brokers and reclamation centers.
- An integrated means of capturing price protection, bracket price information, freight charges and other components of the pricing number.

The **Price Information (879)** message is used only by the UCS guidelines, offering a more simple approach to pricing management than the more complicated business scenarios seen in the mass merchandise, drug and industrial commercial relationships, where the **Price/Sales Catalog (832)** message is more appropriate for use.

2.1.2.8 Retail Account Characteristics (885)

The **Retail Account Characteristics (885)** message is used by a broker or buyer to provide detailed data about a retail account. This information may include physical store characteristics and types of electronic marketing technologies utilized. Physical store characteristics encompass store and department sizes, as well as display opportunities. Electronic marketing types may include electronic shelf tags, video carts, coupon dispensers, frequent shopper cards and in-store broadcasting. This message may also provide the receiver with information on class of trade, retail or wholesale affiliation and the warehouse supplying specific product categories.

In the reclamation process, the **Retail Account Characteristics (885)** message is periodically sent as a complete file refresh to the reclamation center when initiated by the buyer to provide the reclamation center with store specific information.

The principal benefit to sharing this information through electronic messaging is that it provides the seller with sufficient detail concerning specific stores for micro-marketing planning purposes. This enables both the seller and buyer to more efficiently service the consumer.

This business message is contained only in the UCS guidelines.

2.1.2.9 Customer Call Reporting (886)

The **Customer Call Reporting (886)** message is used to enable a broker or seller's sales representative to transmit product level information concerning specific retail accounts. This business message should be communicated immediately after a customer or store visit. The type of product level information that may be provided includes physical conditions, active marketing programs and comparative shelf space allocation.

The broker may report activities such as products purchased, promotions, resets, shelf maintenance, merchandising, selling and can also respond to other ad hoc inquiries.

Use of this message provides another opportunity to integrate data between entities within the sales and marketing area and to avoid labor intensive manual alternatives.

This business message is available to brokers and sellers supporting the UCS guidelines.

2.1.2.10 Coupon Notification (887)

The **Coupon Notification (887)** message can be used by the seller to communicate to an agent information necessary to establish a coupon offer (e.g. magazine ads, free-standing inserts, etc.). It may also be used by the seller or seller's agent to communicate information regarding coupon offers or In-Ad coupon promotions to the buyer or buyer's agent. Information regarding In-Ad promotions would be included in the **Promotion Announcement (889)** message set when sent directly to the buyer.

The chief value of this message lies in its ability to integrate to agent applications. This message is included in the UCS guidelines and supports the GS1 DataBar barcode.

2.1.2.11 Item Maintenance (888)

The **Item Maintenance (888)** message is another in the series of electronic business messages that have been identified in the publication, *Invoice Deductions Guidelines: Report of the Joint Industry Committee*, as key to maintaining accurate product synchronization and to gain resulting improvement in invoice deductions.

The **Item Maintenance (888)** message is used by the seller or broker to provide the buyer with information about a new product or changes to the specifications for an existing product. It maintains the integrity of product information by replacing information in the buyer's database as new information is created by the seller or broker, thus ensuring database synchronization. This enables the buyer to create more accurate purchase orders.

The **Item Maintenance (888)** message is used by the seller or broker to change, add, or delete product information, plus temporarily withdraw or restore an item for distribution. For each individual product, this message set is used by the seller or broker to specify product identification and physical characteristics, to define loading, shipping, and special handling characteristics, and to define the characteristics of the items sold to the consumer.

In the food service industry, the information exchanged through the **Item Maintenance (888)** message is also available through a "pull", not "push", environment using a common product database. The message is used by the seller to maintain information and by the buyer to access information on a product or group of products.

In the reclamation process, the **Item Maintenance (888)** message is periodically sent as a complete file refresh to the reclamation center.

It is recommended that the **Item Maintenance (888)** business message be one of the first messages implemented in an electronic trading partnership between buyers and sellers. This recommendation is made to ensure data synchronization in all business functions. As with the **Price/Sales Catalog (832),** implementers achieve significant benefits:

- It provides ready access to supplier products and product line information.
- It facilitates evaluation of a supplier's product line, new product line extensions or new product introductions.
- It ensures consistent trade item identification using the GTIN, providing the supplier and the buyer with a common item identification system that can be scanned. If this GTIN is used by both partners as their only means of product identification, the need for labor intensive maintenance of item cross reference tables is greatly reduced or eliminated., providing a more cost effective method of conducting business.

The **Item Maintenance (888)** business message is principally designed for use in the grocery industry and is included in the UCS guidelines.

2.1.2.12 Promotion Announcement (889)

The **Promotion Announcement (889)** business message supports four functions related to the communication of product promotions and deals:

- It can be transmitted by the seller directly, by the seller through a broker, or it may originate with the broker to notify the buyer of available new promotion information, to confirm previously presented allowances (even manually conveyed allowances), or to replace an allowance with another, or cancel previously transmitted allowances.
- It can be used by the buyer to communicate the selection of promotion options, such as buying periods or levels of performance.
- It can be used by the seller or broker to transmit changes to an original promotion or deal.
- It can be exchanged bi-directionally between the broker and seller for the purpose of planning specific promotions for allocated market development funds.

Codes within this business message determine the function.

Promotions typically contain effective dates, geographic restrictions, special terms information (if any), conditions and requirements, the amount of the allowance, and the qualifying products.

The **Promotion Announcement (889)** message provides a number of key benefits:

- It allows for systematic announcement of sales promotions.
- It conveys price reductions for the retailer.
- It ensures accurate trade item databases.
- It enables prompt exchange of time sensitive data.

The **Promotion Announcement (889)** message is used both in the UCS and VICS EDI guidelines.

2.1.2.13 Contract and Rebate Management (890)

The **Contract and Rebate Management (890)** business message is used to confirm the details of a contract that has been negotiated between two or more Foodservice parties. Information conveyed in the transaction includes trade party name, address and contact information; trade party role(s), identification of the contract program(s) and the specifics of the program(s) - including specific deals, date(s), contract performance requirements, volume measurements, benchmarks, rebate/billback information, and identification of the product(s), product classification, services(s), and equipment.

This message is used in UCS.

2.1.2.14 Item Information Request (893)

The **Item Information Request (893)** business message is used by the buyer to request product information from the seller or broker. The **Item Maintenance (888)** and the **Price Information (879)** messages or the **Price/Sales Catalog (832)** message are returned by the seller or broker in response to the request when used within the scope of data alignment. This message has additional uses that will be considered in the Plan business process.

The buyer can request information on specific products, locations and time periods, summarized by requested intervals (weeks, months, quarters, etc.).

This message serves to initiate the suite of integrated messages that ultimately lead to data alignment between the seller and buyer. Its principal benefit is that in an integrated relationship, it can trigger an automatic response from the seller's applications that avoid the need for manual communication to initiate data alignment.

This message is contained in both the UCS and VICS EDI guidelines.

2.1.2.15 Product Dimension Maintenance (896)

The **Product Dimension Maintenance (896)** message is used to provide information about the physical characteristics of consumer selling units for use in computerized shelf-space management systems. It may flow from the seller or broker to the buyer, and it may flow to or from third-party service bureaus providing shelf-space management services.

This message has been designed to provide the exact height, width, and depth of an item, as well as placement and other information for items mounted on racks or included in trays or other display units. Its primary benefit is that it allows integrated update of shelf-space management systems, avoiding labor intensive manual entry of this data.

It is used exclusively in the grocery environment, and therefore, is contained only in the UCS guidelines.

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2.2 Plan

The Plan business process includes the various business activities required to achieve ongoing collaboration and information sharing between trading partners that improves sales and demand forecasting. It also includes those business and information sharing activities that should help trading partners maintain agreed-upon inventory levels at the seller's warehouse, buyer's warehouse, and on the consumer shelf. Lastly, it supports accurate management of funds offered by the seller, through its third party agents that are used in support of the buyer's market development.

Electronic messaging provides an effective means of trading forecasts of two types. Sales forecasts reflect either consumer demand or manufacturing consumption. Order forecasts indicate the supply needed to meet future consumption requirements. Both types of forecasts represent specific quantities of demand or supply for products across a specific time interval. These forecasts may represent total demand or various components, such as base/turn, promotional or seasonal. Iterative activities and discussion between trading partners, facilitated through electronic messaging, improve forecasting accuracy in both sales and demand and allow for more effective planning in terms of "make requirements" for sellers and in terms of shelf management for buyers. Electronic messaging allows for forecasting to be extremely dynamic, anticipating changing market conditions and reacting to unforeseen situations. This in turn facilitates responsive planning and sound supply chain management.

Product activity includes sales, orders, cancelled orders, emergency orders, receipts, shipments and on-hand inventories. Depending on the partnership, sales may be interpreted as manufacturing consumption or warehouse withdrawals. Product activity reporting, supported through electronic messaging, reports movement within these contexts during specific time intervals.

The Plan process also focuses on performance history through key supply chain metrics. These metrics may include forecast accuracy, in-stock percentages, fill rates, days of supply or on-time delivery percentages.

2.2.1 Plan Business Functions

Proper execution of the Plan process enables a number of business functions, depicted in **Figure 2B – Plan Basic Business Model,** within each trading partner. These functions include:

- Demand Forecasting
- Sales Forecasting
- Inventory Management
- Promotion Support

2.2.1.1 Demand Forecasting

Demand Forecasting is an estimation of future requirements for a product. The estimate is based on the prediction of future sales and purchasing activity, along with the analysis and evaluation of past activity. Historical records must be kept in order to estimate future demand.

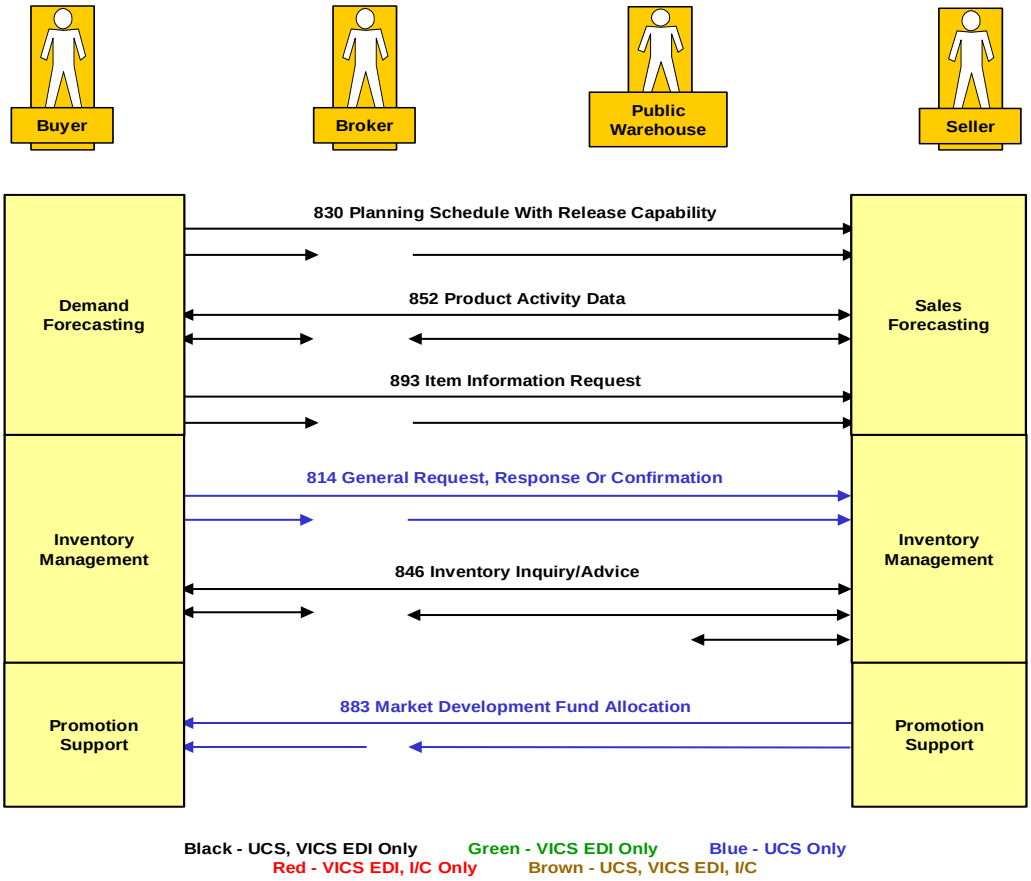
2.2.1.2 Sales Forecasting

Sales Forecasting is the evaluation of product flow in order to project manufacturing requirements and to estimate sales revenue.

2.2.1.3 Inventory Management

Inventory Management has slightly different interpretations, based on whether the trading partner is the seller or the buyer.

Figure 2B: Plan Basic Business Model



For the seller or warehouse, Inventory Management, concerns the physical shipment and receipt of product, the addition and subtraction of product to inventory and the reconciliation of inventory levels.

For the buyer, Inventory Management focuses on the receipt or transfer of product from the seller or public warehouse, the addition of the received products to inventory and the reconciliation of product receipts against purchase order and bill of lading quantities.

2.2.1.4 Promotion Support

Within the Plan process, Promotion Support takes a different interpretation than described previously within Align Data. Here it focuses specifically on the sharing of funds and planning information used to promote product categories in the marketplace by the seller's agent on behalf of the seller and the buyer.

2.2.2 Plan Business Messages

2.2.2.1 General Request, Response or Confirmation (814)

The **General Request, Response or Confirmation (814)** business message supports business activities in the Alcohol Beverage Industry, in which the state liquor controlling agency operates retail sales. Using this message, the state makes an official request to transfer ownership of merchandise from seller-owned (bailment) inventory to state-owned inventory. No response from the seller is required or expected.

The principal benefit of this business message is that it provides an electronic means of making this transfer notification and facilitates inventory management in those bailment locations that contain both supplier owned inventory and state owned inventory. In many locations, these two inventories are separated by nothing more than aisles marking one inventory area from another.

The **General Request, Response or Confirmation (814)** is contained only in the UCS Guidelines.

2.2.2.2 Planning Schedule with Release Capability (830)

The **Planning Schedule with Release Capability (830)** is used by the buyer to notify the seller of planned product sales forecasts or product requirement forecasts which may include custom pallet configurations. The starting and ending dates for the forecast are used to describe when products are needed by the buyer, rather than when sales are made to the consumer.

Forecasts may be structured in two mutually exclusive ways. They can be arranged by location and then by product, or they can be arranged by product and then by location. That is, a forecast may be generated for a single location, such as a warehouse, where line item detail provides demand information for products stored at the buyer's warehouse. Alternatively, a forecast may be generated for multiple locations. In this case, line item detail provides total demand for all locations, and sub-line item detail provides demand information for each location.

This business message provides trading partners with two significant benefits. First, it provides opportunity for a supplier to ensure that there will be stock for a buyer's desired product through the notification of buyer future demand. Second, it allows for a range of forecasting programs to be put into place, from simple data entry to advanced automated forecasting processes that support supplier managed inventory processes and Continuous Planning Forecasting and Replenishment (CPFR) programs.

The **Planning Schedule with Release Capability (830)** is used by suppliers and buyers supporting in grocery, mass merchandise and retail drug industry sectors. As such, it is contained in both the UCS and VICS EDI Guidelines. .

2.2.2.3 Inventory Inquiry/Advice (846)

The **Inventory Inquiry/Advice (846)** business message can be used by a seller, public warehouse or buyer to provide the other party with product inventory information. The transaction set has been structured so that inventory positions can be reported as of a specific date and time. Inventory levels may be reported at the total product level, or they may be broken down by warehouse lot number. This information allows all the parties to synchronize product inventory.

The message can also be used by an internal entity to notify other locations inside the enterprise of current inventory positions.

Having this information further assists the buyer to take advantage of special buys of overstock opportunities reported by the supplier.

The **Inventory Inquiry/Advice (846)** business message may also be employed to notify a buyer of minimum order quantity requirements and total quantity on order for that buyer, as reflected in the supplier's system.

Principal benefits from using this business message include synchronization of inventory levels between the third party and the depositor, a substantial reduction in manual paper flow and the opportunity for the buyer, seller and third parties to minimize inventory carrying costs.

The **Inventory Inquiry/Advice (846)** message is contained in the UCS and VICS EDI Guidelines.

2.2.2.4 Product Activity Data (852)

The **Product Activity Data (852)** business message is used by the buyer to transmit inventory and product sales by location to the supplier. Information from this transaction is often used as input to a vendor's forecasting system. Various types of product activity data can be reported by the buyer to the supplier using this document. This includes:

- Sales
- Movement of inventory from warehouse to final sales locations
- Additional or exceptional demand over and above scheduled replenishment levels
- Out of stock quantities, e.g., lost sales, rain checks or shortfalls
- On-order quantities as reflected in the buyer's systems
- Quantities received as reflected in the buyer's systems
- Adjustments to inventory.

For seller managed replenishment, the buyer transmits product movement using the **Product Activity Data (852)** business message on a scheduled basis (e.g., daily, weekly, monthly, etc.) for input to an inventory management system.

The Alcohol Beverage Industry has adopted another use for this business message for bailment states. The bailment state transmits a **Product Activity Data (852)** message to the seller as notification that the control authority is taking ownership of the product.

The **Product Activity Data (852)** business message also has a unique use related to lottery ticket management. On a periodic basis, generally weekly, the state/provincial lottery authority notifies the retailer of all ticket/game shipment, receipts, activation's, sales and redemptions that have taken place during the period. This data is transmitted using this business message. This information is normally sent to the retailer on a store-by-store

basis. Upon receipt of the **Product Activity Data (852)** the retailer is able to reconcile inventory and sales records and can anticipate the amount of the next invoice to be received from the lottery authority.

The **Product Activity Data (852)** business message offers a number of benefits to suppliers and buyers:

- It reports inventory movement for data analysis
- It helps to streamline and improve inventory management operations
- It reduces inventory handling costs
- It aids in forecasting future demand.

This business message is used extensively in the grocery, mass merchandise and drug retail industry sectors. It is included in both the UCS and VICS EDI Guidelines. A separate implementation guideline (**VICS Product Activity Data – Scan Based Trading (852SB)** has been developed for the retail industry to handle a scan-based trading reporting/replenishment scenario.

2.2.2.5 Market Development Fund Allocation (883)

The **Market Development Fund Allocation (883)** message communicates the funds planning information used to promote product categories in the market place. It is initiated by the seller to advise the broker of available funds within a product category for a specified time period. These funds may be allocated at market, customer or product level. This message can denote original, replacement, or cancellation of funds allocated. It identifies the allocation as an accrual or lump sum.

When transmitting product allocations between the broker and seller, brand codes can be used in lieu of a GTIN. Seller brand codes are defined by the seller and denote a group of GTINs. The seller may also define the promotion requirement parameters to the broker through this message.

Trading partners should not use this message to communicate promotion conditions required or selected. That need is addressed through the **Promotion Announcement (889)** business message.

The chief benefit in using this message is to facilitate data file maintenance at the broker by providing an electronic means of conveyance.

This message is only used by trading partners supporting the UCS guidelines.

2.2.2.6 Trading Partner Performance Measurement (TPPM) (892)

Buyers and sellers in long-term trading relationships often share business measures to evaluate their performance or identify business issues and opportunities. Trading Partner Performance Measurements (TPPM) may be shared as part of a larger structured business process framework such as Collaborative Planning Forecasting and Replenishment (CPFR®), or an industry initiative such as New Ways of Working Together (NWWT).

The Performance Measurement message allows trading partners to identify goals for the measures that that they wish to share, as well as exchange the values for those measures. The scope of the message includes key measures of Sales, Operations, Supply Chain, and Data Accuracy performance, including any of the following specific measures:

Sales

1. Sales Growth (%)
2. Share (%)
3. Retail Item Gross Margin (%)

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4. Retail Gross Profit Margin (%)
5. Forecast Accuracy (%)
6. Markdown (%)

Supply Chain

7. Out of Stock (%)
8. Service Level / Fill Rate (%)
9. Order to Delivery Cycle Time (Hours)
10. On Time Delivery (%)
11. Finished Goods Inventory Cover (Days)

Operations

12. Order Item /Quantity Change (%)
13. Invoice Accuracy (%)
14. On Time Payment (%)
15. Unsaleables (%)

Data Accuracy

16. Item Master Data Accuracy (%)
17. Item Data Synchronisation (%)

The Buyer and Seller utilize standardized calculation methods and nomenclature to describe the performance of their trading relationship, and explicitly identify the levels of detail, time period and other parameters used. Performance may be evaluated relative to goals that the Buyer and Seller have shared, utilizing the same level of detail, time period, and parameters as the results data. Further root cause analysis is done where needed.

For guidance on calculating the performance metrics and populating the EDI data elements, refer to the GS1 Business Message Standard (BMS) Performance Measurement, Release 2.5.0, October 26, 2009:

- This document provides guidance on the performance measurements that are conveyed between the buying and selling parties. The 892 transaction is the X12 EDI equivalent of the GS1 XML TPPM message.
- Class Diagram
  - The business process class diagram is on page 22. This is followed by a listing of key data elements and codes. This information equates to the information found in the X12 segments, date elements and code lists.
- TPPM Attributes Requirements Grid
  - This document guides the user on the specific data elements that are required or optional for specific performance measurements. The grid is on page 34 of the BMS document.
- TPPM Examples
  - Several examples of how to structure different performance measures are given starting with page 35.

2.2.2.7 Item Information Request (893)

The **Item Information Request (893)** business message has applicability beyond the functions described in the Align Data Basic Business Model. Within the Plan Basic Business Model, it is often used within a CPFR environment to request historical activity information from the supplier. The buyer can request information on specific products, locations and time periods, summarized by requested intervals (weeks, months, quarters, etc.).

This use of the **Item Information Requests (893)** provides the following benefits:

- It automates the exchange of historical product information between supplier and buyer
- It facilitates CPFR processes.

This business message is contained in both the UCS and VICS EDI Guidelines. However, its use in support of CPFR has been predominantly linked to drug and mass merchandising retail industry sectors.

2.3. Order

The Order business process includes the activities that takes earlier determined product needs and communicates sufficient information to the seller in order to ensure the opportunity for smooth flow of these goods to the consumer. For the purposes of this discussion, order activities are totally separated from those activities linked to the delivery of goods themselves. However, the overlap between elements of order and deliver are quite significant should not be viewed as completely independent of each other.

2.3.1 Order Business Functions

Proper management of the Order process enables a number of business functions, linked through electronic messaging in **Figure 2C – Order Basic Business Model**, between buyer and seller. These functions include:

- Order Generation (Procurement)
- Order Generation (Deployment)
- Order Revision
- Order Processing.

2.3.1.1 Order Generation (Procurement)

Order Generation/Procurement includes acquisition of needed products or services by a buyer. Normally, purchase orders are issued to sellers to reflect product requirements.

2.3.1.2 Order Generation (Deployment)

Order Generation/Deployment creates purchase orders for products or services offered by a seller. Purchase order information is communicated to the buyer to reflect products that the seller intends to ship.

2.3.1.3 Order Revision

Order Revision is the modification of orders to reflect accurate requirements by the buyer or to reflect accurate deliverables by the seller.

2.3.1.4 Order Processing

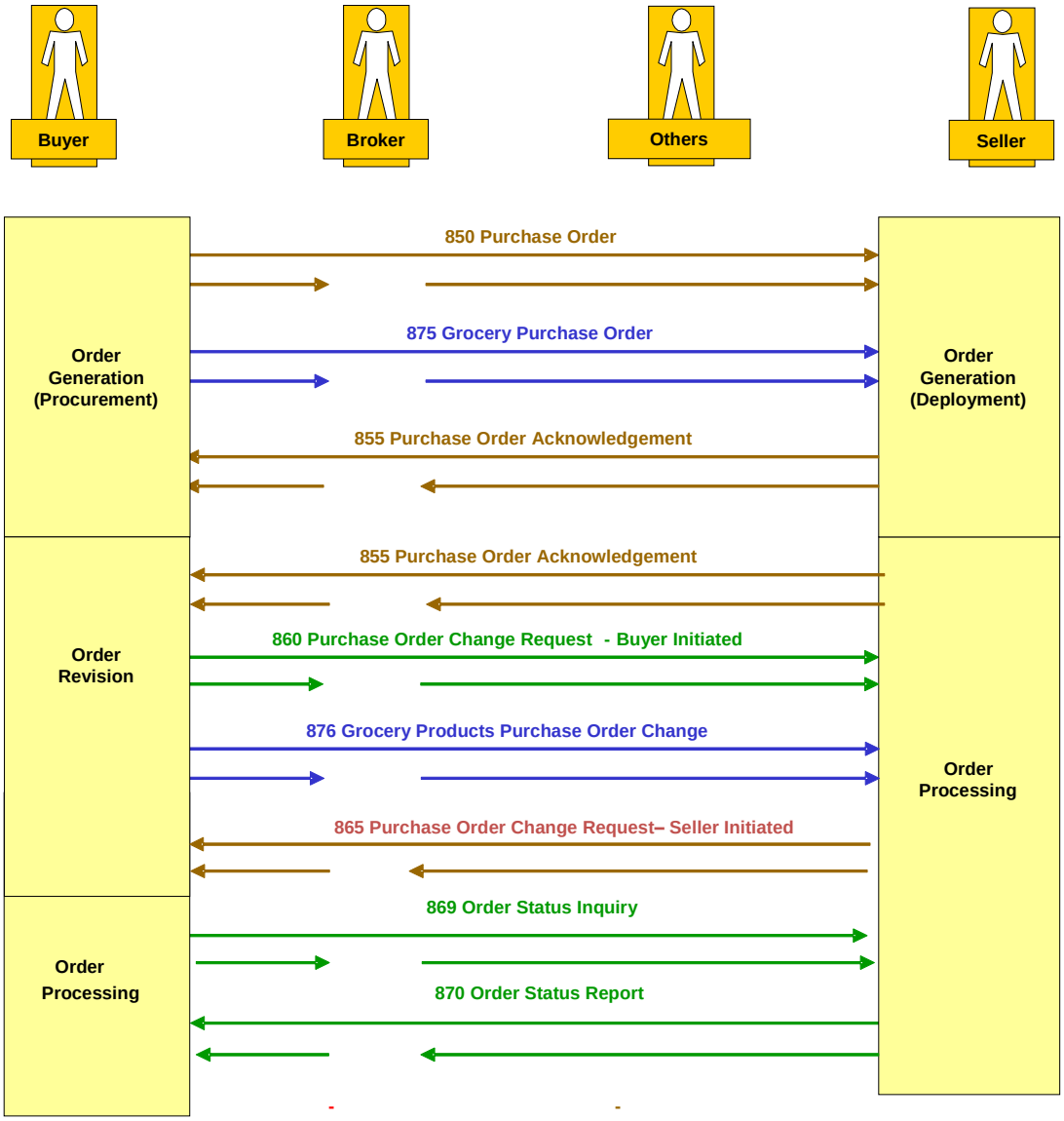
Order Processing is the receipt and processing of purchase order information for subsequent shipment and delivery.

2.3.2 Order Business Messages

2.3.2.1 Purchase Order (850)

The **Purchase Order (850)** is used by the buyer to advise the seller or broker of a request for the delivery of product. The broker uses the **Purchase Order (850)** to communicate the buyer's request for product to the seller. The **Purchase Order (850)** is used to express purchase order information for receiving locations. A **Purchase Order (850)** may be an original, or it may be a confirmation of one already communicated to the seller or broker. It may also be used to express distribution requirements for receiving location(s), such as in cross-dock and/or drop-ship environments. For each purchase order, the buyer must supply a purchase order number and date, indicate which location is to receive the product, specify either a requested delivery date or a shipping/pickup date, and define the products needed with their respective quantities. When processed by the seller, a single purchase order may be result in one or more individual orders or shipments.

Figure 2C: Order Basic Business Model



Black UCS, VICS EDI Only Green VICS EDI Only Blue UCS Only

Red VICS EDI, I/C Only Brown UCS, VICS EDI, I/C

Product quantities are usually expressed in the seller's shipping units. The **Purchase Order (850)** also contains structures which allow the buyer to communicate other pertinent information such as prices, allowances, as well as standard and custom mod pallet configurations. The message also supports US Customs ISF 10+2 filing information requirements. There are guidelines that support GS1 Canada Healthcare and the meat and poultry industry.

The **Purchase Order (850)** may also be used in an 'upstream' – between a manufacturer and raw material supplier – business scenario. For the food industry, a UCS **Purchase Order (850PD** - production order) implementation guideline has been developed.

The benefits obtained from electronic trading of the **Purchase Order (850)** are quite significant. Both the buyer and seller benefit from a substantially reduced volume of paper flow and gain operating efficiencies through reduced time requirements to complete transactions.

2.3.2.2 Purchase Order Acknowledgement (855)

The **Purchase Order Acknowledgment (855)** can be used by the seller or broker to notify the buyer of corrections and/or seller–initiated changes to a previously transmitted **Purchase Order (850)**. In the case when the buyer sends the **Purchase Order (850)** directly to the seller, the seller can also use the **Purchase Order Acknowledgment (855)** to inform the broker of the receipt of the order (carbon copy).

The **Purchase Order Acknowledgment (855)** can also be used by the seller or broker to notify the buyer of a replenishment order generated in response to product movement information reported by the buyer using the **Product Activity Data (852)** transaction set. This eliminates the requirement for the buyer to generate a **Purchase Order (850),** as the **Purchase Order Acknowledgement (855)** fulfils the function of the order itself.

The **Purchase Order Acknowledgment (855)** contains all information normally associated with a purchase order. That is, it must contain information concerning the receiving location, a shipping date, and the products and quantities to be shipped. In addition, the seller or broker may furnish optional information such as product pricing, allowances and charges, and payment terms. The message also supports US Customs ISF 10+2 filing information requirements. There are guidelines that support GS1 Canada Healthcare and the meat and poultry industry.

The **Purchase Order Acknowledgement (855)** offers the benefit of supplying an efficient and integrated means of confirming buyer purchase orders or providing information regarding changes to buyer purchase orders. It simplifies the business process in a relationship between buyer and seller that relies on continuous replenishment with prior notification of product to be shipped.

2.3.2.3 Purchase Order Change Request – Buyer Initiated (860)

Once the capability for processing EDI purchase orders is in place, a method for purchase order changes is necessary. The **Purchase Order Change Request - Buyer Initiated (860)** fulfills this purpose. The information for this message is normally obtained from the same sources as those that created the original **Purchase Order (850)**. This message communicates changes, additions, or deletions to a previously transmitted **Purchase Order (850)**.

Timing is a significant issue in using this business message. A control mechanism needs to be in place to prohibit changes past a certain point in the order-to-delivery cycle. This is extremely critical in a quick response environment. Further, applications need to be tailored as to the type of change desired. This message allows for a diverse number of changes and types to the original order. The message also supports US Customs ISF 10+2 filing information requirements. There are guidelines that support GS1 Canada Healthcare and the meat and poultry industry.

The **Purchase Order Change Request – Buyer Initiated (860)** can also be used in the continuous replenishment trading situation. When the buyer disagrees with elements of the proposed shipment defined in a seller's **Purchase Order Acknowledgement (855),** this message can be used to notify the seller of that disagreement. This allows both parties opportunity to gain consensus on the shipment details. The timing of this activity is quite critical and needs to be closely managed by both buyer and seller.

The **Purchase Order Change Request (860)** may also be used in an 'upstream' – between a manufacturer and raw material supplier – business scenario. For the food industry, a UCS **Purchase Order Change Request (860PD** - production order change) implementation guideline has been developed.

Implementing the **Purchase Order Change Request - Buyer Initiated (860**) increases the operating efficiency of executing purchase order change. This message is used in the UCS and VICS EDI based trading relationships.

2.3.2.4 Purchase Order Change Request – Seller Initiated (865)

Once the capability for processing EDI purchase orders is in place, a method for purchase order changes is necessary. The **Purchase Order Change Request - Seller Initiated (865)** fulfills this purpose. The information for this message is normally obtained from the same sources as those that created the original **Purchase Order (850)**. This message communicates changes, additions, or deletions to a previously transmitted **Purchase Order (850)**. The message also supports US Customs ISF 10+2 filing information requirements.

Implementing the **Purchase Order Change Request - Seller Initiated (865**) increases the operating efficiency of executing purchase order change. This message is used in the UCS relationships.

2.3.2.5 Order Status Inquiry (869)

The **Order Status Inquiry (869)** business message allows a buyer to request pertinent data concerning a purchase order and/or specific trade items on a purchase order. The request is useful since the buyer's distribution center may require information about the specific merchandise.

The principal benefit derived from using the **Order Status Inquiry (869)** is that it promotes a more integrated and accurate purchase order confirmation and status data process. This then enables decision making processes in the receiving environment. The **Order Status Inquiry (869)** is supported in the VICS EDI guidelines.

2.3.2.6 Order Status Report (870)

The purpose of the **Order Status Report (870)** is to inform the buyer of the status of a purchase order and/or trade items on a purchase order. This transaction is prepared in response to the **Order Status Inquiry (869)** or is systematically generated based on predefined conditions between trading partners.

Based on the response, the buyer needs to make a decision regarding forward action. The main consideration at time of receipt should be to determine what action needs to take place to ensure an adequate supply of merchandise.

The **Order Status Report (870)** benefits the trading partnership by providing ongoing and integrated purchase order status information, thus enabling improved decision making in the receiving environment. This message is available to companies trading the VICS EDI guidelines with their partners.

2.3.2.7 Grocery Products Purchase Order (875)

The **Grocery Products Purchase Order (875)** serves the identical purpose and fulfils the same functionality as discussed in the **Purchase Order (850).** The principal difference in these messages is in their complexity of data attribute handling. Grocery products, by their nature, have a significantly less complicated set of product attributes that must be communicated in the ordering process. The **Grocery Products Purchase Order (875)** reflects that reduced complexity in the document structure and code values associated with it.

This business message is found only in the UCS Guidelines.

2.3.2.8 Grocery Products Purchase Order Change (876)

The **Grocery Products Purchase Order Change (876)** serves the same purpose and scope as discussed in the **Purchase Order Change Request – Buyer Initiated (860).** It reflects the simpler communication needs around product attributes associated with the grocery industry.

This business message is found only in the UCS Guidelines.

2.4 Deliver

The Deliver business process encompasses procuring, handling, tracking and delivering products as well as integrating the physical product flows with supportive technologies to minimize total acquisition costs to the consumer. It has two essential components. The first component focuses on transport, which includes all activities completed by the buyer, seller and carrier to move product through the supply chain. The second component focuses on distribution and warehouse operations. Activities within this component are related to internal product movement, inventory management and shipment manifest preparation and notification.

2.4.1 Deliver Business Functions

Figures 2D and 2D-1 – Deliver Basic Business Model, shows how electronic messaging links the business functions that make up the Deliver process. These functions include:

- Appointment Scheduling/Booking Request/Shipment Reporting
- Carrier Notification
- Shipment Processing
- Store Receiving and Returns
- Inventory Management.

2.4.1.1 Appointment Scheduling/Booking Request/Shipment Reporting

Appointment Scheduling is the setting of a pickup or delivery appointment by the entities involved in arranging or providing the transportation. **Shipment Reporting** involves ongoing communication of the status of a shipment, as it moves through the supply chain, to its final delivery destination.

For trans-ocean shipments, a space **Booking Request** reservation and confirmation is a critical step for the movement of product.

2.4.1.2 Carrier Notification

Carrier Notification involves the tender and response to a tender for truckload carrier shipments and less-than-truckload (LTL) bill of lading for a shipment or small package carrier pick-up notification. It may include shipment detail information.

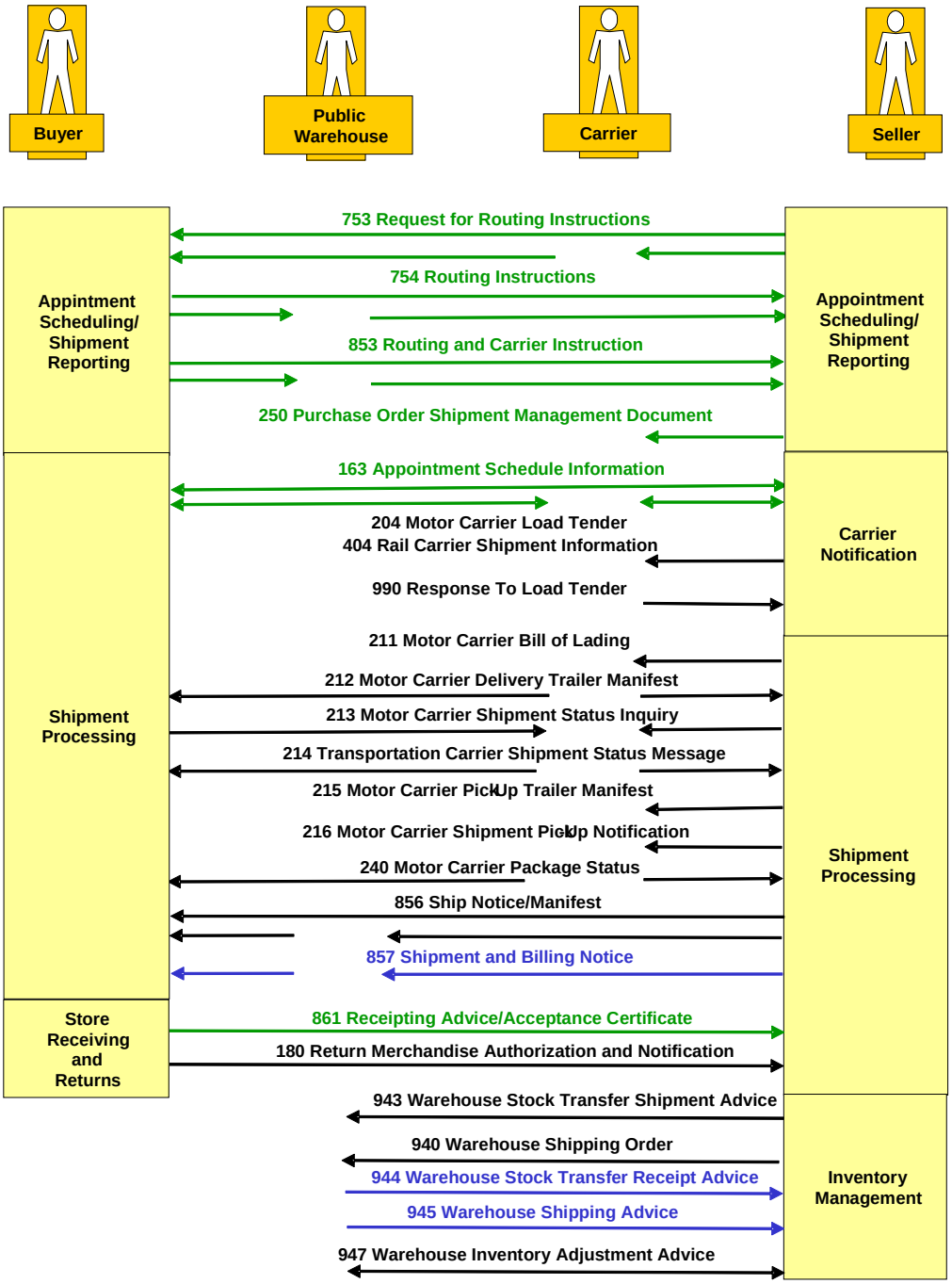
2.4.1.3 Shipment Processing

Shipment Processing encompasses all activities surrounding physical shipment of product to the buyer from the seller or public warehouse. It includes shipment verification and notification and the subsequent updating of the seller's inventory and billing records. It further includes appointment scheduling activities that set a pickup or delivery appointment by the entities involved in arranging or providing the transportation. It also includes shipment reporting**,** which is the ongoing communication of the status of a shipment as it moves through the supply chain to its final delivery destination. Lastly, it includes receipt reporting by the end receiver of the shipment back to the supplier and other involved parties.

2.4.1.4 Store Receiving and Returns

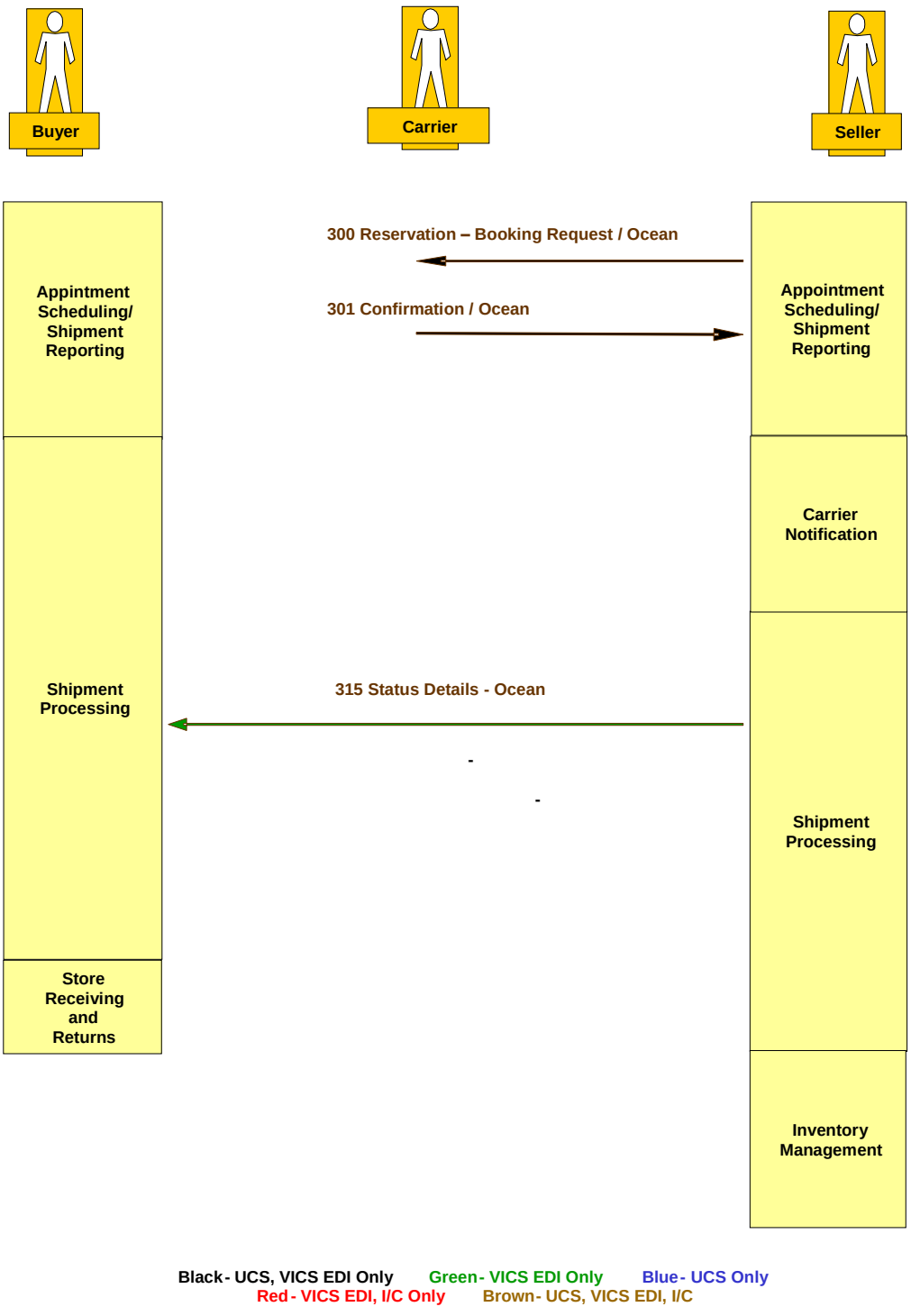
Store Receiving and Returns entails the physical handling of merchandise delivered to a store or returned by a store.

Figure 2D: Deliver Basic Business Model



Black - UCS, VICS EDI Only Green - VICS EDI Only Blue - UCS Only
Red - VICS EDI, I/C Only Brown - UCS, VICS EDI, I/C

Figure 2D-1: Deliver Basic Business Model - Ocean



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2.4.1.5 Inventory Management

This business function was discussed earlier in this document as part of the business functions of the Plan Business Model. Inventory management is not just a part of the planning process but is also a dynamic part of the deliver process as well.

Inventory Management has slightly different interpretations, based on whether the trading partner is the seller or the buyer.

For the seller or warehouse, Inventory Management, concerns the physical shipment and receipt of product, the addition and subtraction of product to inventory and the reconciliation of inventory levels.

For the buyer, Inventory Management focuses on the receipt or transfer of product from the seller or public warehouse, the addition of the received products to inventory and the reconciliation of product receipts against purchase order and bill of lading quantities.

2.4.2 Deliver Business Messages

2.4.2.1 Appointment Schedule Information (163)

The **Transportation Appointment Schedule Information (163)** business message is used to request, change, accept, modify or cancel a pickup or delivery date and time. It can be transmitted between a shipper, buyer, or carrier to request or grant appointment dates and times, as well as arrange changes to existing appointments. The message allows for Standard Carrier Alpha Code (SCAC), delivery points, sequencing and identification information to be communicated.

This message is not used when LTL and small package carriers have standing appointments, or when a motor carrier receives confirmed scheduled appointment dates and times in the **Motor Carrier Load Tender (204),** the **Motor Carrier Bill of Lading (211)** or the **Motor Carrier Pick-up Manifest (215**).

A separate business message is used to schedule appointments for each shipment or trailer. The pick-up and delivery appointments for a single shipment or trailer may be scheduled in a single message. The pick-up and delivery appointments for a multiple stop shipment may also be scheduled in a single message

The **Transportation Appointment Schedule Information (163)** improves shipment planning for shippers, buyers and carriers and reduces the need for telephone calls between those parties. This message is not used in I/C EDI.

2.4.2.2 Return Merchandise Authorization and Notification (180)

In VICS EDI, the **Return Merchandise Authorization and Notification (180)** notifies a supplier of the pending return of merchandise along with the buyer's intended disposition of the merchandise. It also provides the ability for the supplier to authorize a return or other disposition. This transaction facilitates the disposition of previously received merchandise. Partners trading this message find increased efficiency by reducing the time needed to notify and execute a return of product and improved inventory accuracy with the creation of a tracking Return Merchandise Number (RMN) to facilitate the physical return of product.

The UCS use of this business message is more directly tied to the Pay function and will be discussed there.

This business message is not used in I/C EDI.

2.4.2.3 Motor Carrier Load Tender (204)

The **Motor Carrier Load Tender (204)** business message is used to tender a shipment to a truckload motor carrier. The message can provide detailed bill of lading, rating and scheduling information pertaining to the pick-up of a shipment. It can also be used as a legal bill of lading between the shipper and motor carrier. When the **Motor Carrier Load Tender (204)** is sent by a retailer, it is for the express purpose of notifying the motor carrier of a customer pick-up.

This business message may also be sent from the shipper to a third party that provides a freight payment service. In this scenario, it is expected that the freight payment service will transmit a **Payment Order/Remittance Advice (820)** to the carrier.

Using this business message generally improves shipment planning for shippers and carriers. It also provides more accurate data in the **Motor Carrier Freight Details and Invoice (210)** and provides more accurate data in the **Transportation Carrier Shipment Status Message (214).** It also eliminates data entry errors by the carrier.

This business message is not used in I/C EDI.

2.4.2.4 Motor Carrier Bill of Lading (211)

This business message is transmitted from the organization that controls the shipment (usually the shipper) to the carrier. In an LTL environment, the **Motor Carrier Bill of Lading (211)** is an exact representation of the shipment and replaces the paper bill of lading. This message includes all of the data required by the carrier to rate the shipment including pick up and delivery detail, freight class, weight, number of pieces, pallets and purchase order numbers. When used, the shipper provides a paper manifest to the carrier upon pick-up.

Partners trading this business message generally find improvement in shipment planning, more accurate data in the **Motor Carrier Freight Details and Invoice (210)** and **Transportation Carrier Shipment Status Message (214)** messages. It also eliminates data entry errors by carriers.

This business message is not used in I/C EDI.

2.4.2.5 Motor Carrier Delivery Trailer Manifest (212)

This business message is transmitted from the motor carrier to the consignee (usually the buyer) generally when a distribution center is utilized. **The Motor Carrier Delivery Trailer Manifest (212)** includes data on all of the LTL shipments included on the trailer destined for one and only one delivery location. Potentially, small package carriers could use this transaction set in the same manner.

Benefits derived from using this message are up-to-date status information of shipments and the ability for the consignee to better manage manpower requirements.

This business message is not used in I/C EDI.

2.4.2.6 Motor Carrier Shipment Status Inquiry (213)

The **Motor Carrier Shipment Status Inquiry (213)** is used by a shipper or consignee to request the status of a shipment from a motor carrier. The business message allows the sender to send administrative comments to the motor carrier to better clarify the information sought about the shipment. It is not widely used since most motor carriers provide shipment status messages on a regularly scheduled basis.

This business message is not used in I/C EDI.

2.4.2.7 Transportation Carrier Shipment Status Message (214)

The **Transportation Carrier Shipment Status Message (214)** is used by truckload and LTL carriers to provide dates, times, route and identifying numbers for shipments. It can also serve as a bill of lading by providing shipment weights, quantities and lading exceptions. In addition, the **Transportation Carrier Shipment Status Message (214)** can include reference numbers required to match the status to the shipment in the shipper's or consignee's system. These reference numbers include the carrier's PRO number, shipment identification number (i.e., bill of lading) assigned by the shipper, or purchase order numbers. It may be transmitted before, during or after shipment.

A **Transportation Carrier Shipment Status Message (214)** will not be sent until the shipment has been received by an LTL carrier or a load tender has been accepted by a truckload carrier. The first shipment status message will usually include the date of pick up, the carrier's PRO number, an estimated date of delivery, and required reference numbers which may include a shipment identification number (i.e., bill of lading) assigned by the shipper, and purchase order numbers.

In many instances, the only additional shipment status messages sent by the carrier will be after delivery of the shipment or if the estimated delivery date originally provided changes. When necessary, updates to a shipment status can be transmitted while the shipment is en-route. These shipment status messages would normally be transmitted once a day and only provide the carrier's reference number and the change in status.

The **Transportation Carrier Shipment Status Message (214)** can be used to evaluate carrier performance. Many shippers and consignees utilize the original shipment status and the final shipment status to determine if the carrier met its transit time schedules.

This business message is not used by I/C EDI environment.

2.4.2.8 Motor Carrier Pick-Up Trailer Manifest (215)

This business message is used to replace the paper manifest for small package carriers and includes all of the detail information about every package (shipment) tendered to the small package carrier at that time. The **Motor Carrier Pick-Up Manifest (215)** contains the minimum details including the destination, bar code identification numbers, number of pieces, weight, and other identifying numbers.

Partners exchanging this business message find it improves shipment planning for shippers and carriers, provides more accurate data in the **Motor Carrier Freight Details and Invoice (210)** and in the **Motor Carrier Package Status Message (240)**. It further eliminates manual processing as well as keying errors by the carrier.

This business message is not used in I/C EDI environment.

2.4.2.9 Motor Carrier Shipment Pick-Up Notification (216)

This business message is used to automate the pick up function in an LTL or small package carrier environment. The **Motor Carrier Shipment Pick-up Notification (216)** is usually transmitted the day before pick-up is required and replaces the traditional phone call to the carrier's terminal. The **Motor Carrier Shipment Pick-up Notification (216)** is not required for LTL or small package carriers that provide daily pick-up service.

This business message is not used in I/C EDI.

2.4.2.10 Motor Carrier Package Status Message (240)

This message is used by the small package carrier to notify the shipper, consignee, or other interested parties of the package status. It provides the status of the package in terms of dates, times and locations. In addition, the **Motor Carrier Package Status Message (240)** can include reference numbers required to match the status to the package in the shipper's or consignee's system. These reference numbers include the carrier's tracker number, shipment identification number (i.e., manifest) assigned by the shipper, or purchase order numbers.

A **Motor Carrier Package Status Message (240)** will not be sent until the package has been received by a small package carrier. The first package status message will usually include the date of pick up, the small package carrier's tracker number, an estimated date of delivery, and required reference numbers which may include a shipment identification number (i.e., manifest) assigned by the shipper and purchase order numbers.
In many instances, the only additional package status messages sent by the small package carrier will be after delivery of the package or if the estimated delivery date originally provided changes. When necessary, updates to a package status can be transmitted while the package is in route. These package status messages would normally be transmitted once a day and only provide the carrier's reference number and the change in status.

Additionally, the **Motor Carrier Package Status Message (240)** can be used to evaluate the small package carrier's performance. Many shippers and consignees utilize the original package status and the final package status to determine if the small package carrier met its transit time schedules.

This business message is used by VICS EDI and UCS.

2.4.2.11 Purchase Order Shipment Management Document (250)

The **Purchase Order Shipment Management Document (250)** is used to convey data to the motor carrier, relevant to the purchase order, which enables the carrier to assist in the purchase order management process from the time of pick up through delivery. The **Purchase Order Shipment Management Document (250)** is sent by the originator of the purchase order and contains the valid purchase order numbers, shipment windows, pieces, weight, sort segregate data, and other related purchase order information. The carrier uses this data to verify purchase order numbers, help manage the ship windows and verify shipment details.

This business message is not used in the UCS or I/C EDI guidelines.

2.4.2.12 Reservation – Booking Request (Ocean) (300)

The Reservation – Booking Request (Ocean) business message is used by a shipper or a forwarder to reserve space, containers and equipment for transport by ocean vessel.

The business message is used by VICS EDI, UCS and I/C.

2.4.2.13 Confirmation – (Ocean) (301)

The Confirmation- (Ocean) business message is used to provide all the information necessary for an ocean carrier to confirm space, container, and equipment availability in response to the Reservation (Booking Request) (Ocean) Transaction Set (300); or to notify other parties such as terminal operators or other ocean carriers.

The business message is used by VICS EDI, UCS and I/C.

2.4.2.14 Status Details - (Ocean) (315)

The Status Details (Ocean) business message is used to provide all the information necessary to report status or event details for selected shipments or containers. It is intended to accommodate the details for one status or event associated with many shipments or containers, as well as more than one status or event for one shipment or container.

The business message is used by VICS EDI, UCS and I/C.

2.4.2.15 Rail Car Shipment Information (404)

The **Rail Carrier Shipment Information (404)** business message is used to tender a shipment to a rail carrier. The message can provide detailed bill of lading, rating and scheduling information pertaining to the pick-up of a shipment. It can also be used as a legal bill of lading between the shipper and rail carrier. When the **Rail Carrier Shipment Information (404)** is sent by a retailer, it is for the express purpose of notifying the rail carrier of a customer pick-up.

The business use of this message is only supported in the UCS guidelines.

2.4.2.16 Request for Routing Instructions (753)

The **Request for Routing Instructions (753)** allows the supplier to request routing instructions from the buyer. The request will be for shipments originating from one shipping origin point to be delivered to one or more destination points. Information to be provided for this request will include purchase order details (quantities, weights, & cube), shipment details (quantities, weights and cube), commodity classifications in shipment [refer to the National Motor Freight Carriers 100 series], instruction as to how the load [unitized methodology] is being tendered to the pick-up carrier, pick-up date, time of availability for pick-up, and the applicable shipment contact details.

Using the **Request for Routing Instructions (753)** business message improves operating efficiencies through the elimination of telephone and fax requests, improves accuracy of data, and facilitates routing process automation.

This business message is supported only in the VICS EDI guidelines.

2.4.2.17 Routing Instructions (754)

The **Routing Instructions (754)** allows the buyer to respond to a **Request for Routing Instructions (753)** from the supplier. The instructions may also be for a temporary routing.

Using the **Routing Instructions (754)** business message improves operating efficiencies through the elimination of telephone and fax requests, improves accuracy of data, and facilitates routing process automation.

This business message is supported only in the VICS EDI guidelines

2.4.2.18 Routing and Carrier Instruction (853)

The **Routing and Carrier Instruction (853)** allows the buyer to accurately convey detailed routing and carrier information in a timely manner and eliminate the publication of detailed routing guides. For each origin/destination pair, the buyer sends detailed routing/carrier information to be used for various weight breaks. The supplier can then integrate this information directly into shipping and routing systems and automatically select the best routing at the time of shipment generation.

This business message is used as the default routing guide only. When routing instructions are supplied on an order, the routing guide instructions are overridden.

The **Routing and Carrier Instruction (853)** benefits the delivery function as it improves operating efficiencies through reduced data entry, improves accuracy of data, substantially reduces paper flow, reduces publication and mailing costs and provides the buyer with positive control over the creation and delivery of routing guides.

This business message is supported only in the VICS EDI guidelines.

2.4.2.19 Ship Notice/Manifest (856)

The **Ship Notice/Manifest (856**) business message may be used by either the seller or public warehouse to advise the buyer of shipment information. In addition it may also be used by a seller to notify a public warehouse when a shipment of product is made from the seller's plant or producing location or from another public warehouse. Exchange of information is accomplished using a flexible data structure to report information.

The structure of this message allows reporting at shipment, order, tare (pallet), pack and item levels. The **Ship Notice/Manifest (856)** provides the receiver with information necessary to schedule shipment receipt and storage.

In some trading partnerships, when transfer shipments from a seller are received by a public warehouse, the **Warehouse Stock Transfer Receipt Advice (944)** is used to confirm the receipt of product.

At the shipment level, transportation information may be reported. This should include carrier, routing, trailer number, bill of lading number, and shipping or delivery date information, as well as total volume and weight. At the order level, the buyer's purchase order number and the status of the order are reported. The tare level accommodates pallet identification as a shipping container when the pallet is marked with a Serial Shipping Container Code (SSCC). The pack level allows for case/carton identification (GTIN) and product quantity. The item level contains consumer product identification, such as the GTIN-12 value and specific pack information.
The **Ship Notice /Manifest (856)** supports the use of barcode and Electronic Product Code / Radio Frequency Identification (EPC/RFID) data carriers**.**

The primary advantage of exchanging this business message is that this information may be integrated into the various systems without multiple data entry operations. The information is useful in merchandise tracking, delivery appointment scheduling and providing automatic container identification at point of receipt (using bar codes). At point of receipt, merchandise may be checked in at multiple levels. At the shipment level, the total number of received containers can be verified against the **Ship Notice/Manifest (856)** as to quantity. Detail carton verification can take place since carton contents are transmitted along with the container identification. When the supplier ships to a distribution center, the buyer can utilize the carton identification for cross docking. This implies that scanning equipment is in place to accomplish this task. In addition, the data provided within the **Ship Notice/Manifest (856)** is used as verification of the carton label. This enables an automatic update of receiving systems as well as appropriate merchandise tracking and financial applications. Furthermore, checking of carton content is possible on a random basis. This lot testing procedure can detect possible merchandise discrepancies at the distribution center rather than at store level.

The key to successfully implementing this business message lies with the timing of transmission. It is designed to convey shipment detail prior to physical delivery of the product.

Other benefits from using the **Ship Notice/Manifest (856)** include reduced off-loading time at receiving dock, reduced check-in time from receipt to selling floor, and well as providing a cross reference to the **Transportation Carrier Shipment Status Message (214)** or the **Motor Carrier Package Status Message (240)** business message data contents.

Specific **Ship Notice/Manifest (856)** implementation guidelines support US Customs Import Security Filing 10+2 information, batch level reporting for the meat and poultry industry, substitute product information for the produce

industry and pallet/asset tracking using the GS1 GRAI (Global Returnable Asset Identifier) and GIAI (Global Individual Asset Identifier) identifiers.

From a process perspective,
(1)The truck/vehicle needs to be loaded and closed
(2) The 856 Ship Notice may be transmitted as soon as possible once the truck is closed
(3) The truck/vehicle does not have to leave the dock for the 856 Ship Notice to be transmitted
(4) The 856 Ship Notice needs to arrive before the truck/shipment arrives at its destination.

Some trading partners may request that the 856 Ship Notice be transmitted prior to the vehicle being closed or that the transaction be transmitted prior to the pick process. There are also scenarios where the 856 Ship Notice/Manifest is transmitted for inbound shipments from overseas, when there is the possibility that the shipment changes while in transit. If so, there is risk of the 856 Ship Notice being incorrect. Trading partners that expect this type of process should be able to accept updated 856 Ship Notice transactions.

It is also important to recognize that some suppliers may have system limitations issuing an 856 Ship Notice prior to order pick completion.

The business use of this message is supported by VICS EDI, UCS, and I/C.

2.4.2.20 Shipment and Billing Notice (857)

The **Shipment and Billing Notice (857)** combines the requirements of the **Ship Notice/Manifest (856)** and the **Grocery Products Invoice (880)** business messages and is used by the seller to provide the buyer with both shipment and invoice information. Like the ship notice, the exchange of information is accomplished using a flexible data structure that allows for the reporting of data at the shipment, order, tare (pallet), pack and item levels.

At the shipment level, transportation information may be reported. This would include carrier, equipment and routing information, as well as the bill of lading number, total weight and volume, method of payment, and shipment and scheduled delivery dates. At the order level, the seller's invoice number, terms and totals are reported. The tare level accommodates pallet identification, such as the SSCC. The pack level allows for case/carton identification (GTIN). The item level contains consumer product identification, such as the GTIN-12, product quantity, specific pack, price and allowance/charge information.

The **Shipment and Billing Notice (857)** business message would be used in place of the **Ship Notice/Manifest (856)** and the **Grocery Products Invoice (880) (or Invoice (810))** together.

At times there are certain United States governmental regulations that must be met in select business processes. In one such case, in order to ensure no loss of payment rights regarding commodities purchased under the United States Department of Agriculture (USDA) Perishable Agriculture Commodities Act (PACA), the **Shipment and Billing Notice (857)** message was revised to support inclusion of the trust notice statement within the transaction set.

The **Shipment and Billing Notice (857) supports the use of GS1 barcodes and Electronic Product Code / Radio Frequency Identification (EPC/RFID) data carriers as well as product serial number identification.**

The **Shipment and Billing Notice (857)** may also be used in a DSD (Direct Store Delivery) business scenario. It supports delivery of the product (UCS **Shipment and Billing Notice – Direct Store Delivery implementation guideline (857DS)** when paired with the **Delivery/Return Acknowledgment or Adjustment (895)** business message. In this scenario, product is checked-in at the pallet (tare) level instead of by individual consumer or case units.

The **Shipment and Billing Notice (857)** may be used in a DSD (Direct Store Delivery) returns business scenario. Product that is being returned from the buyer to the seller is given a GS1 Serial Shipping Container Code (SSCC) value to identify the tare-level return. A **Shipment and Billing Notice (857RD) Direct Store Delivery Returns Detail** business message is transmitted from the seller to the buyer, with the SSCC value and monetary credit amount. The SSCC value is matched to the tare-level marked returning product.

This business message is supported only in the UCS guidelines. Refer to the *UCS for Direct Store Delivery Implementation Guideline* for additional information on this alternative DSD business scenario.

2.4.2.21 Receiving Advice/Acceptance Certificate (861)

The **Receiving Advice/Acceptance Certificate (861)** business message may be used to report receipt of shipments in a vendor managed stock replenishment program or in a third party receiving environment. When used in a vendor managed stock replenishment scenario, the **Receiving Advice/Acceptance Certificate (861)** is used to report receipt of shipments by the retailer to the supplier in a vendor managed stock replenishment program. The received shipments are identified by the container ID number or vendor shipment number. This notification will provide an exact receipt date to the vendor which is input to the replenishment system to relieve the in-transit position.

In a third party receiving scenario, the **Receiving Advice/Acceptance Certificate (861)** is used to report the receipt and condition of goods. The goods being received are identified by either SSCC or a trade item identification number.

Implementing the **Receiving Advice/Acceptance Certificate (861)** business message allows quick and accurate transfer of receipt data, provides the ability to relieve in-transit quantities on a timely basis, identifies product condition, allows for receipt by either carton or item, provides visibility of inventory levels at the third party warehouse and eliminates paper based processes

Within a Direct Store Delivery (DSD) process, the **Receiving Advice/Acceptance Certificate (861)** may also be used in response to an **856 Ship Notice/Manifest**, whereby the message identifies the variance in product received versus product identified within the **856 Ship Notice/Manifest**. Additionally, the message may be used to identify the variance of product invoiced in an **810 Invoice** from what was delivered.

This business message is supported only in the VICS EDI guidelines.

2.4.2.22 Warehouse Shipping Order (940)

The **Warehouse Shipping Order (940)** is a business message used by the seller to authorize the public warehouse to make a shipment to a buyer. It specifies what products to ship and the quantity of each. Using this message, the seller can advise the warehouse of an original, confirmation, change, replacement or cancellation of an order.

At a minimum, the seller must specify the seller's order number, the buyer's purchase order number, the shipping date, the buyer's receiving location and the products to ship with their respective quantities. Within the manufacturer/public warehouse relationship, the seller's product code may be used in addition to the GTIN. Depending on the information available to the seller and the business relationship with the warehouse, the seller may also specify standard and custom mod pallet configurations, carrier information, other parties involved in the order (such as a broker), temperature requirements, special handling services, bill of lading notes and other product information (such as lot numbers and production codes).

The GS1 Serial Shipping Container Code (SSCC) may be used to identify the logistics unit (pallet, carton, etc.) for shipment. The **Warehouse Shipping Order (940**) supports use of the GS1 barcode and Electronic Product Code / Radio Frequency Identification (EPC/RFID) data carriers as well as product serial number identification.

The **Warehouse Shipping Order (940)** uses one of two distinct methods to communicate shipping instructions to a third party warehouse. The first method, "Item Warehouse Shipping Order", conveys instructions to ship the same product to multiple locations. The second, "Carton Warehouse Shipping Order", conveys instructions to ship specific cartons to a single location. The cartons (and the carton content) are identified by their container serial numbers.

Parties trading the **Warehouse Shipping Order (940)** are providing accurate data to the third party warehouse as well as improving operating efficiencies through reduced data entry and substantially reduced paper flow.

The business use of this message is not supported in the I/C EDI guidelines.

2.4.2.23 Warehouse Stock Transfer Shipment Advice (943)

The **Warehouse Stock Transfer Shipment Advice (943)** is used by a seller, a depositor or an agent of the depositor to advise the recipient that a transfer shipment has been made. This transaction set provides a public warehouse with detail information concerning product being shipped to that location.

The **Warehouse Stock Transfer Shipment Advice (943)** provides the public warehouse with information about the pending shipment. To fully benefit from information contained in the **Warehouse Stock Transfer Shipment Advice (943**), the seller or depositor must transmit the business message on a timely basis allowing the warehouse sufficient time to schedule for receipt of the shipment.

The GS1 Serial Shipping Container Code (SSCC) may be used to identify the logistics unit (pallet, carton, etc.) for shipment. The **Warehouse Stock Transfer Shipment Advice (943**) supports use of the GS1 barcode and Electronic Product Code / Radio Frequency Identification (EPC/RFID) data carriers as well as product serial number identification. .

This business message is supported in the UCS and VICS guidelines.

2.4.2.24 Warehouse Stock Transfer Receipt Advice (944)

The **Warehouse Stock Transfer Receipt Advice (944)** is used by a public warehouse to notify a seller when a transfer of product has been received at the warehouse. Besides confirming the receipt of a transfer shipment, this business message is used to report overages and shortages of product, damaged product, and specific product status, such as warehouse lot number and production codes.

The **Warehouse Stock Transfer Receipt Advice (944)** provides the seller with information to properly record and adjust product inventory levels at a public warehouse. To fully benefit from information contained in the **Warehouse Stock Transfer Receipt Advice (944**), the public warehouse must transmit the business message on a timely basis and the seller's inventory management system must be capable of recognizing and processing the receipt data.

The GS1 Serial Shipping Container Code (SSCC) may be used to identify the logistics unit (pallet, carton, etc.) for shipment. The **Warehouse Stock Transfer Receipt Advice (944**) supports use of the GS1 barcode and

Electronic Product Code / Radio Frequency Identification (EPC/RFID) data carriers as well as product serial number identification. .

This business message is supported in the UCS and VICS guidelines.

2.4.2.25 Warehouse Shipping Advice (945)

The **Warehouse Shipping Advice (945)** is used by the public warehouse to advise the seller that a shipment was made. It is used to reconcile order quantities with shipment quantities. The contents of the seller's order, coupled with the shipping information reported by the warehouse, are used to generate order corrections prior to the invoicing of an order. The exchange of information is accomplished using a flexible data structure that allows for the reporting of data at the shipment, order, tare (pallet) and pack.

Depending on the seller's requirements, the warehouse may report the complete order as shipped or shipped with exceptions. The warehouse usually reports the buyer's purchase order number, actual shipping date, carrier used, bill of lading number (if different from the order number) and master bill of lading number (if consolidations were done). The tare level accommodates pallet identification, such as the SSCC. The pack level allows for case/carton identification and product quantity. Structures exist for the warehouse to report a reason for a change in the shipping date, a reason products were cut from a shipment, and product substitution information. As in the **Warehouse Shipping Order (940),** the seller's product number may be used in conjunction with the seller's GTIN.

The GS1 Serial Shipping Container Code (SSCC) may be used to identify the logistics unit (pallet, carton, etc.) for shipment. The **Warehouse Shipping Advice (945)** supports use of the GS1 barcode and Electronic Product Code / Radio Frequency Identification (EPC/RFID) data carriers as well as product serial number identification.

This business message is supported in the UCS and VICS guidelines.

2.4.2.26 Warehouse Inventory Adjustment Advice (947)

The **Warehouse Inventory Adjustment Advice (947)** can be used by either the warehouse or the seller to notify the other party of a change in inventory position. It provides quantity and status information that allows for the adjustment of inventory records. This is different from the **Inventory Inquiry/Advice (846**), which can be used to report total inventory position, and the **Product Activity Data (852)** business message, which can be used to report inventory changes over a period of time. Often the **Warehouse Inventory Adjustment Advice (947)** is used after a physical inventory is taken at a warehouse.

At the line item level, product inventory adjustments are reported to increase or decrease the amount of product in inventory. Besides simple book adjustments, structures exist to report quantity changes to previously reported information, to put product "on hold" or to take product "off hold," to specify and recoup product damage, and to indicate problems in locating product.

These adjustments may be temporary or permanent.

Trading partners exchanging the **Warehouse Inventory Adjustment Advice (947)** can provide accurate data to the depositor, substantially reduces paper flow, communicate inventory changes to the depositor and re-synchronize totals after a physical inventory is taken.

The GS1 Serial Shipping Container Code (SSCC) may be used to identify the logistics unit (pallet, carton, etc.) for shipment. The **Warehouse Inventory Adjustment Advice (947**) supports use of the GS1 barcode and Electronic Product Code / Radio Frequency Identification (EPC/RFID) data carriers as well as product serial number identification.

This business message is supported in the UCS and VICS guidelines.

2.4.2.27 Response To A Load Tender (990)

When the **Motor Carrier Load Tender (204)** is used as a load tender by truckload carriers, the response is transmitted in this business message. The **Response to a Load Tender (990)** is used by a motor carrier to accept, conditionally accept, or decline a load tender.

Exchanging the **Response to a Load Tender (990)** allows for better shipment pick up planning, automation of the load tendering process and reduces telephone calls associated with manual processes.

This business message is supported in both in the UCS and VICS EDI guidelines.

2.5 Pay

The Pay business process includes requesting payment, reconciling of orders to payment, generating settlement with carriers and other third parties, resolving discrepancies for products or services, generating settlement of request for payment, and validation of settlement of request for payment.

2.5.1 Pay Business Functions

Figure 2E – Pay Basic Business Model, shows how electronic messaging links the business functions that make up the Pay process. These functions include:

- Request for Payment Generation
- Request for Payment Validation
- Debit/Credit Adjustments
- Control Totals
- Settlement of Request for Payment.

2.5.1.1 Request for Payment Generation

Request for Payment Generation is the creation of billing information for products or services. The process may be used by any organization to request payment.

2.5.1.2 Request for Payment Validation

Request for Payment Validation is the process of determining the correctness of an invoice. The process includes validating the items involved, quantities and costs (including promotions and other allowances and charges), non-item-specific allowances and charges (including freight), and terms of sale. When appropriate, the process may generate adjustments to the amount of payment.

2.5.1.3 Debit/Credit Adjustments

The **Debit/Credit Adjustment** process allows the parties involved in the purchase process to advise the other parties of adjustments related to products shipped and/or received.

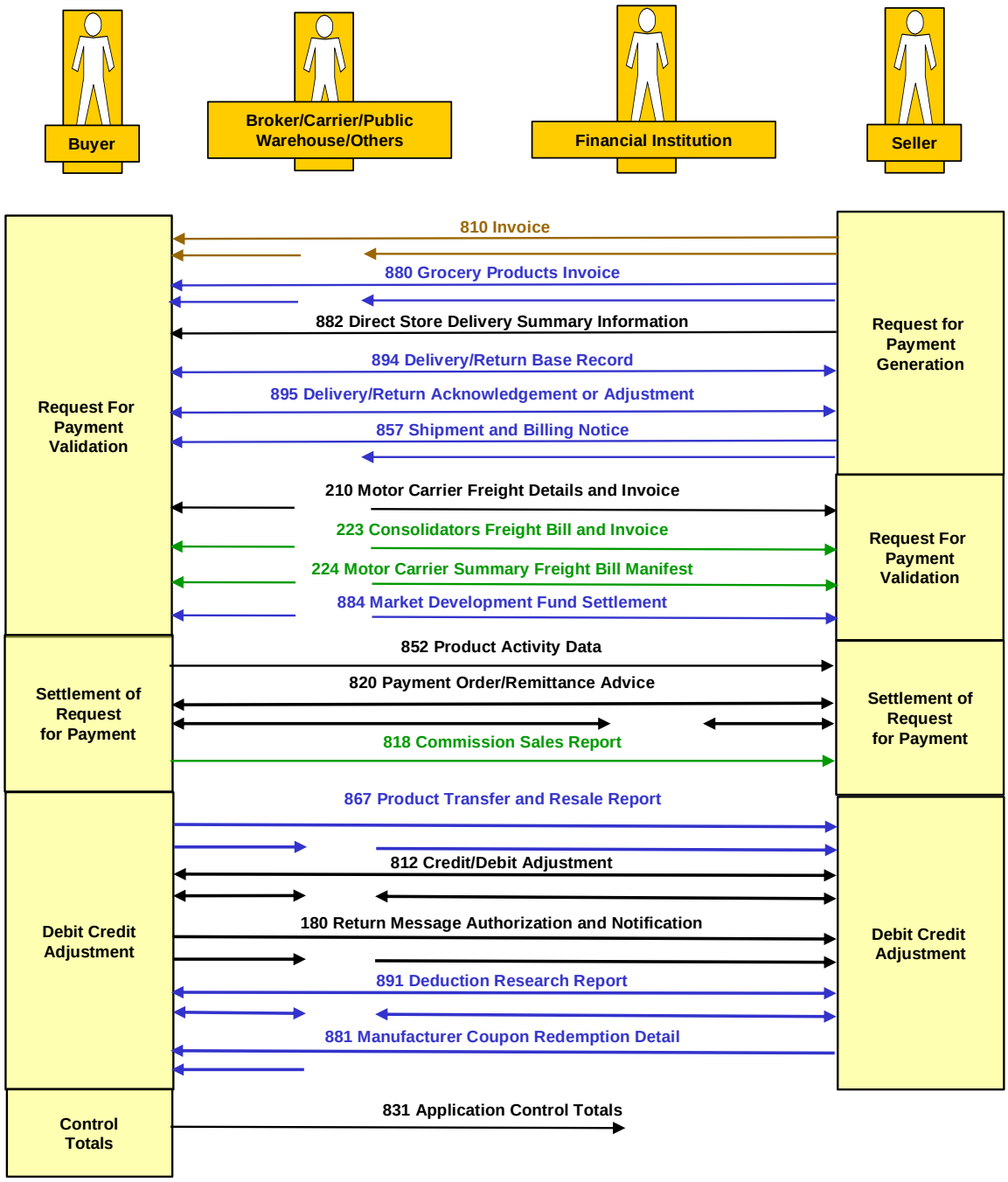
2.5.1.4 Control Totals

Control Totals involves verifying the monetary value of the Request for Payment business messages transmitted for processing by the financial institution.

2.5.1.5 Settlement of Request for Payment

Settlement of Request for Payment is the process of creating and submitting payment and/or remittance details to the payee.

Figure 2E: Pay Basic Business Model



Black - UCS, VICS EDI Only Green - VICS EDI Only Blue - UCS Only
Red - VICS EDI, I/C Only Brown - UCS, VICS EDI, I/C

2.5.2 Pay Business Messages

2.5.2.1 Return Merchandise Authorization and Notification (180)

In the UCS guidelines, the **Return Merchandise Authorization and Notification (180)** business message is used for reporting return product detail in support of a previously transmitted **Credit/Debit Adjustment (812).** The sender should reference the original Credit/Debit adjustment number.

This business message is not used in I/C EDI.

2.5.2.2 Motor Carrier Freight Details and Invoice (210)

The **Motor Carrier Freight Details and Invoice (210)** business message is used by the motor carrier to provide the seller, public warehouse or buyer with charges and/or payment information for services rendered on a shipment. It can also be sent to the seller by the public warehouse, when they are acting as the motor carrier. Through the message, the motor carrier or public warehouse would report the quantity, weight and charges applying to each item shipped, or the entire bill of lading. Charges that apply to a stop off are also reported.

For prepaid shipments, the **Motor Carrier Freight Details and Invoice (210)** is usually sent upon receipt of the shipment by the carrier. For shipments sent collect, the **Motor Carrier Freight Details and Invoice (210)** is usually sent after delivery of the shipment.

When integrated properly, the receipt of this transaction set can save substantial data entry time. In addition, if the shipper has an integrated shipping system, an automatic match and reconciliation can be performed.

This business message is not used in I/C EDI.

2.5.2.3 Consolidators Freight Bill and Invoice (223)

This business message is used by a consolidator to request payment and provide detail pertaining to freight pickup services, consolidation services, and delivery services. The **Consolidators Freight Bill and Invoice (223)** is used by the consolidator to provide an invoice to the party responsible for payment of the freight charges and consolidator services.

Partners exchanging this message can save substantial data entry time. In addition, if the shipper has an integrated shipping system, an automatic match and reconciliation can be performed.

This business message is not supported in UCS or in I/C EDI.

2.5.2.4 Motor Carrier Summary Freight Bill Manifest (224)

This business message is used as an invoice to request payment for services rendered for multiple freight bills. The **Motor Carrier Summary Freight Bill Manifest (224)** is used by the motor carrier to provide a single business document with multiple invoices to the party responsible for payment of the freight charges. The **Motor Carrier Summary Freight Bill Manifest (224)** is usually sent on a predetermined scheduled basis.

Partners exchanging this message can save substantial data entry time. In addition, if the shipper has an integrated shipping system, an automatic match and reconciliation can be performed.

I/C EDI and UCS do not support this business message.

2.5.2.5 Invoice (810)

The **Invoice (810)** message is generated by the supplier to bill the buyer for products and services provided. The **Invoice (810)** allows a buyer to record payment-request information and automatically update applicable systems. The data contained in the business message provides automated cross-referencing of purchase order and receiving data. If a consolidated invoice is used, receiving and reconciliation must support multiple invoices being combined into one **Invoice (810).**

This process occurs without manual intervention, thus eliminating further key entry.

At times there are certain United States governmental regulations that must be met in select business processes. In one such case, in order to ensure no loss of payment rights regarding commodities purchased under the United States Department of Agriculture (USDA) Perishable Agriculture Commodities Act (PACA), the **Invoice (810)** message was revised to support inclusion of the trust notice statement within the transaction set.

The **Invoice (810)** is also used in the Lottery Management process to request payment or issue credit for game tickets sold or redeemed during a specified period of time. Implementation guidelines also exist in support of GS1 Canada Healthcare, Convenience Store and the meat and poultry industry.

This business message is supported in all three sets of guidelines.

2.5.2.6 Credit/Debit Adjustment (812)

The **Credit/Debit Adjustment (812)** is used by one party to notify the other party of a monetary adjustment that is being taken, or to request that one be issued. The adjustment typically pertains to a prior purchase order or invoice, and may provide additional detail about adjustments made on a **Payment Order/Remittance Advice (820).** However, this transaction may also be used to identify adjustments which do not pertain to a specific invoice, such as billback promotions.

Within the military resale environment, the **Credit/Debit Adjustment (812)** is used by the seller to credit the buyer for product delivered to the military.

Within the reclamation environment, the reclamation center may initiate the **Credit/Debit Adjustment (812)** as the buyer's agent and transmit it to the seller.

In the Wine and Spirits industry sector, bailment states periodically transmit a **Credit/Debit Adjustment (812)** business message to notify the seller of the aggregate product shipped out of its warehouse to the stores. The seller may transmit an **Invoice (810)** transaction set to the buyer for payment.

Specific information provided by the buyer includes the buyer's credit/debit number, an adjustment reason code, and the dollar amount of the credit/debit. Many other details can be provided. For example, a deduction for a per case billback promotion can be detailed with the number of cases involved as well as the allowance per case the buyer was expecting.

The **Credit/Debit Adjustment (812)** message should be transmitted to the seller before payment is made. Then, the remittance information which accompanies the payment to the seller would reference the buyer's credit/debit reference identifier.

This business message is not used in I/C EDI.

2.5.2.7 Commission Sales Report (818)

The **Commission Sales Report (818)** provides a method for the buyer to communicate sales information by employee and selling location to the supplier for sales commission purposes. In this relationship, the buyer and the supplier contribute to the total compensation due the selling associate.

The supplier needs to develop a system to handle the variable components of a sales transaction in which commissions are included. In order to reimburse the buyer's organization for their (the supplier) portion of employee compensation, the application needs to recognize multiple levels and identification of selling location (i.e., store, department, counter) for each buying organization.

This business message is supported only in the VICS EDI guidelines.

2.5.2.8 Payment Order/Remittance Advice (820)

The **Payment Order/Remittance Advice (820)** may be used to communicate remittance information and/or to initiate a payment. Typically it is used by the buyer (payer) to notify the seller (payee) of payment of an invoice or invoices. Additionally, it can be used by the seller to notify the buyer of payment of an invoice for coupons redeemed, product reclamation, or a credit due the buyer or payment for promotion performance.

This business message must be sent by the payer to a financial institution when it is being used to generate a transfer of funds to the seller. When used in this manner, the supporting remittance information may be sent bundled with the payment order through the banking system, to be forwarded to the payee. Alternatively, the corresponding remittance information can be sent unbundled in a separate message transmission directly to the payee utilizing a second **Payment Order/Remittance Advice (820),** bypassing the banking system. If the remittance information is sent separately, a trace number must be transmitted to allow the receiving party to match to the corresponding EFT. Additionally, the remittance advice may be sent prior to payment receipt, thereby providing the seller with a 'pre-advice' notice. The message also supports international payments. A separate guideline has been established for the meat and poultry industry.

This message is also used to report discrepancies between an invoiced amount and the amount being paid. The following practice is recommended when the business message is utilized for this purpose:

- Detailed adjustment information that pertains to an item (e.g., invoice) actually being paid by a **Payment Order/Remittance Advice (820)** should be included in the same **Payment Order/Remittance Advice (820)** message.

- Detailed information regarding all other adjustments should be communicated via the **Credit/Debit Adjustment (812)** business message. When the subsequent financial correction (e.g., deduction) is made, the **Payment Order/Remittance Advice (820)** should include summary information specific to the adjustment and a cross reference to the **Credit/Debit Adjustment (812)** business message that contains the detail information.

When received by the seller, the **Payment Order/Remittance Advice (820)** may be used to allocate money to invoices, to anticipate cash availability and to document adjustment reasons that can aid in adjustment reconciliation.

This business message is not used in I/C EDI.

2.5.2.9 Application Control Totals (831)

The **Application Control Totals (831)** may be used with the **Payment Order/Remittance Advice (820)** to serve as a balancing mechanism for financial institutions. It also may be used by the payer's treasury operation as part of an audit procedure with the financial institution to verify the monetary value of payments generated by the accounts payable system. The totals passed in the **Application Control Totals (831)** includes monetary or quantity totals.

The contents of this business message enable financial institutions to automate the verification of the number of **Payment Order/Remittance Advice (820)** business messages or the dollar totals contained within them.

This business message is not used in I/C EDI.

2.5.2.10 Product Activity Data (852)

The **Product Activity Data (852)** business message can be used by the buyer to report point-of-sale (P.O.S.) scanned item movement to the seller. This information can be used as the basis for payment. Payment can be made in any form agreed by the parties, including use of the **Payment Order/Remittance Advice (820)** business message as described above.

This business message is only used by VICS EDI and UCS.

2.5.2.11 Shipment and Billing Notice (857)

The **Shipment and Billing Notice (857)** combines the requirements of the ship notice and invoice transaction sets and is used by the seller to provide the buyer with both shipment and invoice information. Like the ship notice, the exchange of information is accomplished using a flexible data structure that allows for the reporting of data at the shipment, order, tare (pallet), pack and item levels. This is discussed in greater detail in the Deliver business process

The **Shipment and Billing Notice (857)** transaction set is used to replace both the **Ship Notice/Manifest (856)** and the **Grocery Products Invoice (880)** together. It cannot be used to replace either transaction individually.

This business message is not used in the VICS EDI or I/C EDI guidelines.

2.5.2.12 Product Transfer and Resale Report (867)

The **Product Transfer and Resale Report (867)** is used by a military buyer to transmit shipment and invoicing information to the seller or seller's broker for product that was shipped to the military. The **Product Transfer and Resale Report (867)** provides the seller with a summary or roll-up of deliveries made by the buyer over a defined period of time, such as every two weeks. For each delivery made to the military, the buyer summarizes the receiving location, military contract and call numbers, delivery date, quantity of each product delivered, GTIN for each product, and the buyer's case price for the product, including any allowances.

The seller uses this information to create an invoice for transmission to the military, and to credit the buyer for product delivered using the **Credit/Debit Adjustment (812)** business message**.** The **Product Transfer and Resale Report (867)** is used by a seller, broker or buyer to identify the ultimate distribution point of product. The information provided in the message enables the seller, broker, buyer or food service operator to correctly record product destination for analysis on product movement, promotion moneys, product specification compliance, and sales commissions.

This message identifies the buyer's distribution center and the final downstream distribution point. It provides the specific date of receipt downstream or date range to which that transfer applies, as well as quantities at the line item level. Additionally, this transaction supports the use of the SSCC to track product movement from the seller to the final destination.

In food service, the **Product Transfer and Resale Report – Foodservice Reporting (867FR)** is used by the seller to transmit invoicing information and sales commissions earned to their brokers. Summary or detailed information of buyer invoices is included to provide the broker the required information to reconcile broker commissions when paid by the seller. The broker enters this information in a receivables application. When the

commission payment is made, the seller sends the **Payment Order/Remittance Advice (820)** to support the commission payment of specific invoices.

An additional process supported within the foodservice industry is the **Product Transfer and Resale Report – Foodservice Billback (867FB).** This process allows for reporting rebate performance and billback information,

The business use of this message is only supported in the UCS guidelines.

2.5.2.13 Grocery Products Invoice (880)

The **Grocery Products Invoice (880)** is used to request payment for goods or services within the grocery industry. The **Grocery Products Invoice (880)** specifies the seller's terms of sale, delineates the products that were delivered and the quantity billed, provides item list price for each product, and documents allowances or charges that are applicable.

To fully realize the productivity benefits offered by the **Grocery Products Invoice (880)** in the receiving party's settlement area, automated bridges must be built between the information contained in the **Grocery Products Invoice (880)** and the information in the receiver's purchasing, pricing, receiving and payable systems. Invoices in which no discrepancies exist can be automatically scheduled for payment. Discrepancies and exceptions require manual follow-up. The **Credit/Debit Adjustment (812)** and/or the **Payment Order/Remittance Advice (820)** messages are used to communicate or resolve discrepancies and exceptions.

The **Grocery Products Invoice (880)** is also used by the buyer or the buyer's agent to request payment for redeemed coupons. When used for this purpose, this business message provides information about the quantity and face value of the coupons redeemed. The type of invoice - such as Regular Clearing House, Pay Direct, Retailer Direct, Scan Validate or Quick Pay - is identified. A Regular Clearing House Invoice, Pay Direct or Retailer Direct invoice may summarize information in batches with associated Store Tag identification.

At times there are certain United States governmental regulations that must be met in select business processes. In one such case, in order to ensure no loss of payment rights regarding commodities purchased under the United States Department of Agriculture (USDA) Perishable Agriculture Commodities Act (PACA), the **Grocery Products Invoice (880)** message was revised to support inclusion of the trust notice statement within the transaction set.

This business message is supported only in the UCS guidelines.

2.5.2.14 Grocery Products Invoice – Coupon Invoice (880)

The use of manufacturer rebate coupons plays a large role in the consumer products industry. The **Grocery Products Invoice – Coupon Invoice (880)** is used by a retailer, wholesaler, or retail clearinghouse to request payment for the redemption of supplier coupons from a manufacturer or manufacturer's agent. The message also supports information carried in the GS1 DataBar barcode.

This business message is supported only in the UCS guidelines.

2.5.2.15 Manufacturer Coupon Redemption Detail (881)

As a result of the seller's coupon redemption reconciliation process a **Manufacturer Coupon Redemption Detail (881)** business message may be sent by the seller or seller's agent to the buyer or the buyer's agent to identify differences between the buyer's and seller's redemption amounts. Any adjustments to the payment amount would include reasons identified by the Coupon Industry Standard Adjustment Reason Codes.

This business message is supported only in the UCS guidelines.

2.5.2.16 Direct Store Delivery Summary Information (882)

The **Direct Store Delivery Summary Information (882)** business message is used by a DSD seller to request payment from the buyer for deliveries made to the buyer's stores. The message functions much as a statement, since it summarizes delivery tickets/invoices that were created at the time product was delivered. Each statement summarizes one or more invoices. It does not include full line item detail.

The business use of this message is supported in both UCS and VICS EDI.

2.5.2.17 Market Development Fund Settlement (884)

The **Market Development Fund Settlement (884)** business message is used by the broker to communicate settlement information associated with a single Market Development Fund (MDF) event. The seller can also initiate this transaction set to notify a broker of payment made to reconcile MDF balances. If used by the broker, it must indicate if it is a request for payment or a notification of deduction. Appropriate reference numbers must be included, e.g., check number, deduction number or buyer's invoice number.

This business message is supported only in the UCS guidelines.

2.5.2.18 Deduction Research Report (891)

The **Deduction Research Report (891)** business message is used by a seller to request information regarding an invoice deduction. It may also be used by a broker to provide complete detail needed to resolve deduction amounts. Information provided by this message includes amounts and reasons for deductions, e.g., pricing error, allowance error, non-saleable merchandise, shortage, market development funds, etc. Reference numbers identifying the seller's original invoice and/or buyer's claim or adjustment control number should be included.

This business message is supported only in the UCS guidelines.

2.5.2.19 Delivery/Return Base Record (894)

The **Delivery/Return Base Record (894)** business message is used by the seller to transfer delivery and, optionally, invoice information to a buyer within a DSD (Direct Store Delivery) environment. Alternatively, for returns, the **Delivery/Return Base Record (894)** is used by the buyer to transfer return and, optionally, credit information to a seller. The *UCS for Direct Store Delivery Implementation and User Guide* contains detailed information concerning conventions and usage of the **Delivery/Return Base Record (894**).

The **Delivery/Return Base Record (894)** may be exchanged at the store level by connecting the route driver's handheld computer with the store's receiving computer in a Direct Exchange protocol (DEX), or it may be exchanged using normal UCS network communications (NEX) and then downloaded to the store by the buyer prior to the delivery. The UCS Communication Standard contained in the UCS standards manual provides technical information on these exchange options.

The **Delivery/Return Base Record (894)** was designed to accommodate the information historically carried on a route driver's delivery ticket or invoice. Within Direct Store Delivery, product is usually identified using the GTIN-12 or 14-digit GTIN. However, other conventions and structures have been developed to handle deposit item returns, non-resaleable items such as displays, and other special conditions such as aggregates. For clarity, each line item is assigned a sequential line item number. Delivery quantities may be expressed in units, cases, dozens or pounds. Optional structures exist to provide pricing and payment terms, so that the delivery ticket can be fully extended as an invoice. Additional required segments provide for signature information and check sum information to validate the successful transfer of information during direct exchange.

At times there are certain United States governmental regulations that must be met in select business processes. In one such case, in order to ensure no loss of payment rights regarding commodities purchased under the United

States Department of Agriculture (USDA) Perishable Agriculture Commodities Act (PACA), the **Delivery/Return Base Record (894)** message was revised to support inclusion of the trust notice statement within the transaction set.

The business use of this message is supported in the UCS guidelines.

2.5.2.20 Delivery/Return Acknowledgement and Adjustment (895)

The **Delivery/Return Acknowledgment or Adjustment (895)** business message is the companion to the **Delivery/Return Base Record (894)** message within a DSD environment. This message may be transmitted by the buyer or the seller (in direct exchange) to modify the contents of the original **Delivery/Return Base Record (894**).

Alternatively, it may be used to close-out a delivery through the exchange of signature information. Within a direct exchange environment, information may flow iteratively from buyer to seller and from seller to buyer. Normally, this occurs at the end of the check-in process, when delivered product and quantities have been validated by store personnel.

To reflect changing business needs, the **Delivery/Return Acknowledgment or Adjustment (895)** business message may also be used as a response to the **Shipment and Billing Notice (857DS)** message when used within a DSD business scenario. In this business scenario, an order is transmitted to the seller, who in-turn transmits the **Shipment and Billing Notice (857DS)** message in advance of delivery to the buyer. A tare-level SSCC value in the message matches to the SSCC markings on the pallet, which is used for product check-in.

In many ways, the **Delivery/Return Acknowledgment or Adjustment (895)** is a mirror of the **Delivery/Return Base Record (894).** Line Items are modified using the sequential line number originally encoded on the **Delivery/Return Base Record (894**). Items are deleted by specifying a zero delivery quantity. Items are added by appending new line items.

This business message is supported in the UCS and VICS guidelines.

2.6 EDI Support

EDI Support is the adherence to the different protocols used in maintaining effective communication of EDI-based business transactions. While it is not a business process similar to the five processes previously discussed, these business messages are critical to a thorough facilitation of EDI.

2.6.1 EDI Support Business Processes

The two principal business processes related to EDI support are Trading Partner Maintenance and EDI Administration.

2.6.1.1 Trading Partner Maintenance

Before business messages can be exchanged through EDI, trading partner information must be defined and exchanged. The **Organizational Relationships (816)** transaction may be used to establish and update trading partner name, location, and operating entity organizational relationships.

2.6.1.2 EDI Administration

EDI Administration is the establishment and maintenance of internal business processes to enable EDI linkages with trading partners. It is also the process of communicating data integrity exceptions to the responsible business process for resolution between the trading partners. Requirements surrounding recommended administration of the EDI environment are discussed in this document in the section presenting implementation guidelines.

2.6.2 EDI Support Business Messages

2.6.2.1 Application Advice (824)

As seen in **Figure 2F – EDI Support**, the **Application Advice (824)** business message is used to report the acceptance, rejection or acceptance with change of a trading partner's transaction as it applies to its data content. The message contains information identifying the originating business message such as reference numbers, dates, quantities and monetary amounts. It also provides trading partner information, technical error descriptions with free-form text-format capability.

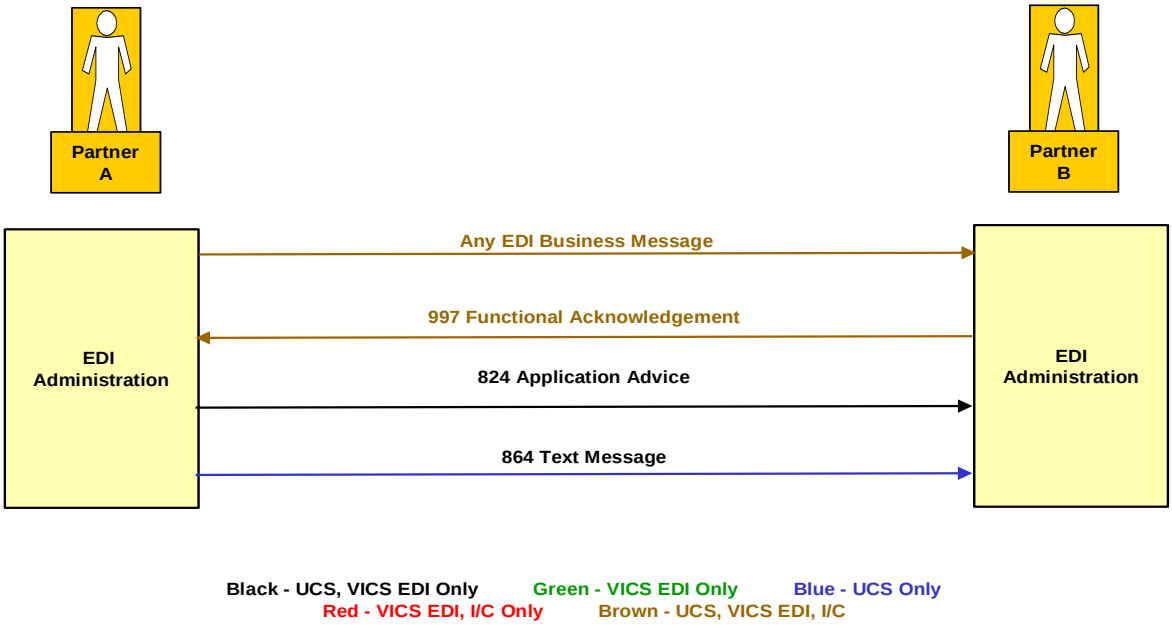
The **Application Advice (824)** should not be used in place of a business message designed as a specific response to another business message, e.g., the **Response to Request for Quotation (843)** is the reply to the **Request for Quotation (840**). This message eliminates the need to communicate application errors by phone, fax, or mailed paper reports. It allows the originator of the transaction set to correct inconsistencies in a timely manner, minimizing the impact on time sensitive applications.

This business message is supported in the VICS EDI and UCS guidelines.

2.6.2.2 Text Messaging (864)

The **Text Message (864)** provides a vehicle for transmitting free-form text messages to trading partners. Use of the **Text Message (864)** is not encouraged, nor is it meant to serve as a replacement for third-party e-mail

Figure 2F: EDI Support



services currently available. The structure of the **Text Message (864)** does not support the addressing mechanisms contained in third-party e-mail systems, and any partners implementing the **Text Message (864)** for report transfers must arrange for proper delivery of the transaction to the intended final recipients.

2.6.2.3 Functional Acknowledgement (997)

The **Functional Acknowledgment (997)** is used to indicate the results of a syntactical analysis of functional groups and their business messages by EDI translation software. **Functional Acknowledgments (997)** are automatically generated by EDI translation software for transmission back to the sending party. They confirm the delivery of information and document any formatting errors or loss of data. Business messages with errors may be accepted with errors or rejected. Rejected messages must be corrected and re-transmitted by the sending party.

The **Functional Acknowledgment (997)** does not confirm that the receiver's application system was able to process the message received.

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3 Enabled Business Practices

This chapter discusses principal business practices using the GS1 core business processes.

3.1 Order-to-Pay

Order-to-Pay is the core business practice upon which all other business practices are founded. In this guide, this business practice encompasses the precepts of Simpl-eb (simple electronic business), a worldwide, e-business initiative created by several groups, including the Global Commerce Initiative (GCI) and the foundational work of GS1 and GS1 US.

The goal of Order-to-Pay is to apply a set of core e-business standards to the trading process, using common definitions of parties, data, and processes. Implementers of Order-to-Pay strive to maximize the use of technology and communication methods in order to increase efficiency, productivity and service levels throughout their supply chains.

There are six fundamental principles guiding successful implementation of the Order-to-Pay business practice:

- Use Simple, Standard Processes Across Supply Chains - Order-to-Pay includes common processes that are simplified and standardized across the supply chain through the elimination of unproductive and redundant steps, assignment of each activity to a party responsible for the activity's successful completion, restriction of information supplied to that deemed usable and required in order to complete each process step, and the correlation of each business transaction to a single physical event in the supply-chain process.

- Pre-alignment of Master Data - Before any supply-chain activities can take place, it is essential that information about the products, services, and trade parties be aligned between supply chain partners. For example, "party address" or "payment terms" that remain stable and unchanged across multiple purchase orders would be understood and aligned by all parties in advance of any data exchange.

- Independence of Syntax and Technology - Despite changing technology or data format, the data and process definitions used in Order-to-Pay will not change in terms of the business models. Order-to-Pay is founded on the processes of basic business models used across various industries and business entities.

- Standard Data Element Definitions - A set of syntax (or format)-neutral data guidelines must be shared among all parties that will interpret the data. A common interpretation of information exchanged must be agreed upon prior to the use of Order-to-Pay, and specifically includes the use of predefined terminology tables, the standard use of synonyms, and the use of a single naming convention.

- Standard Identification Linking Transactions to Master Data - A standard method of identification is used to link predefined and pre-aligned master data with the actual “transactional data” used in the Order-to-Pay process.

- Application to Business Processes Throughout the Business Cycle - The use of Order-to-Pay can be applied to all business processes throughout the business cycle and throughout the supply chain. Order-to-Pay can be used when defining planning, execution, and reporting functions within the supply chain.

The process flow of **Order-to-Pay**, reflected in **Figure 3A – Order-to-Pay**, includes basic elements. The following parameters have been set to ensure successful implementation of an **Order-to-Pay** initiative:

- There is only one buyer in the process.
- There is only one seller in the process.
- General sales conditions are pre-determined by mutual agreement of all parties.
- Trading partner agreements are completed.
- Alignment of master data, including item, party and price, has been completed.
- One order is placed for one delivery in one location at one time.
- A consistent ordering unit, delivery unit, and request for payment unit do not change throughout all processes.
- The order currency and the request for payment currency are the same.
- The Global Trade Identification Number (GTIN) does not change throughout the order, delivery, and pay core processes.

Figure 3A: Order-to-Pay

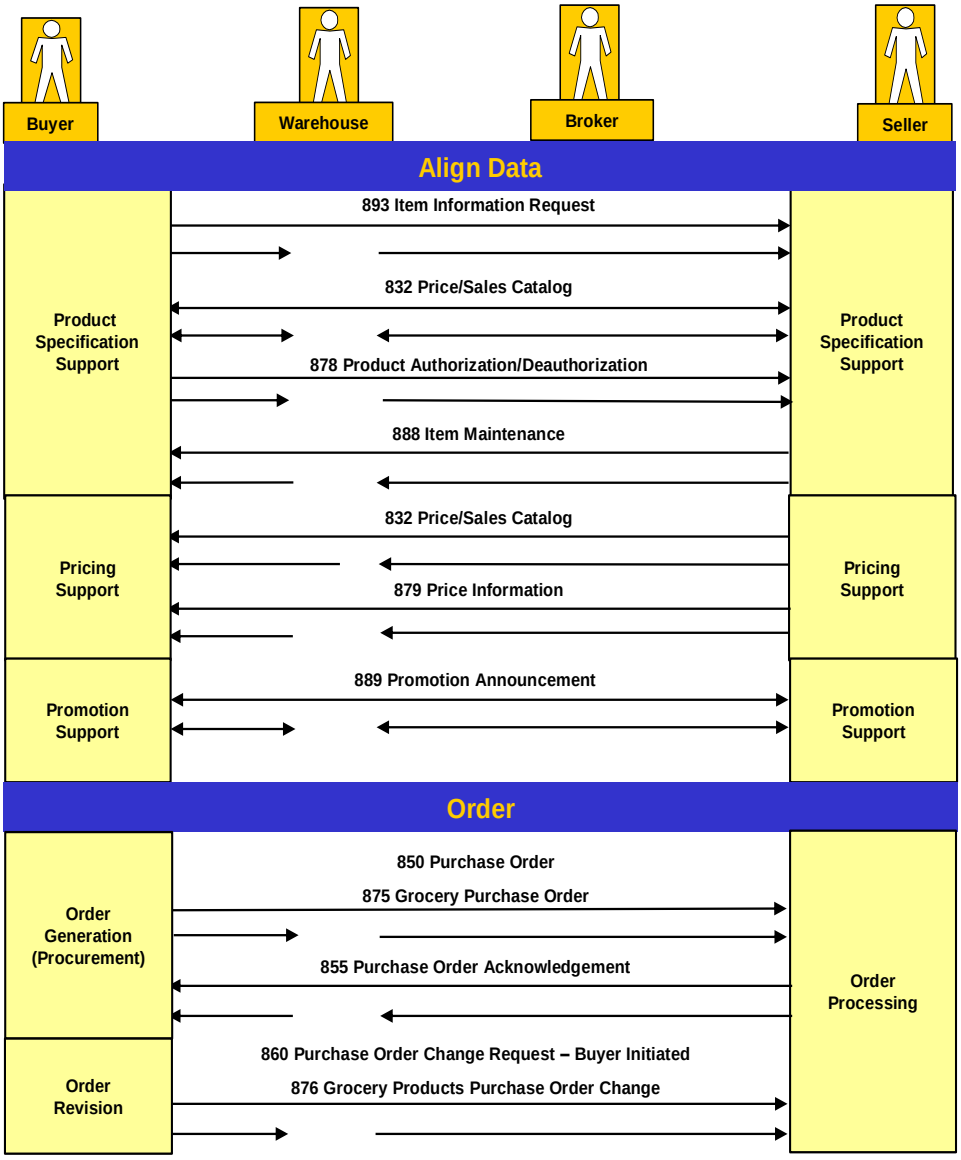
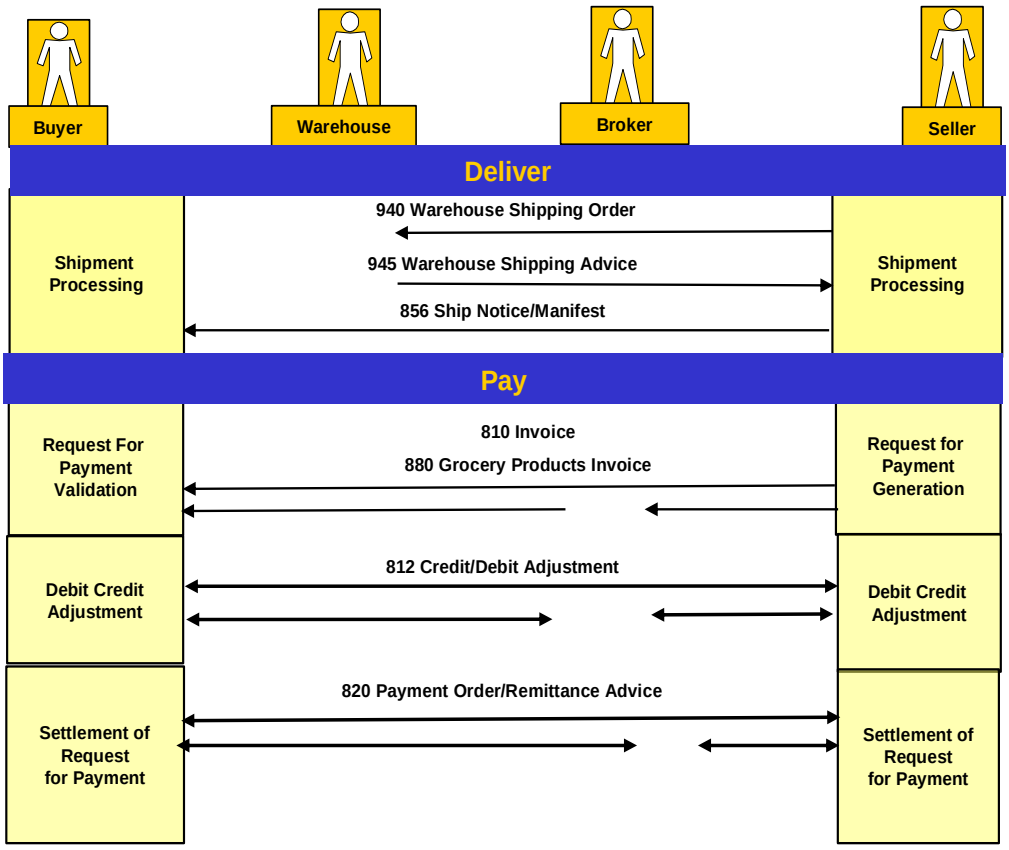


Figure 3A: Order-to-Pay (continued)



3.2 Logistics Business Practice - Transportation Scenarios

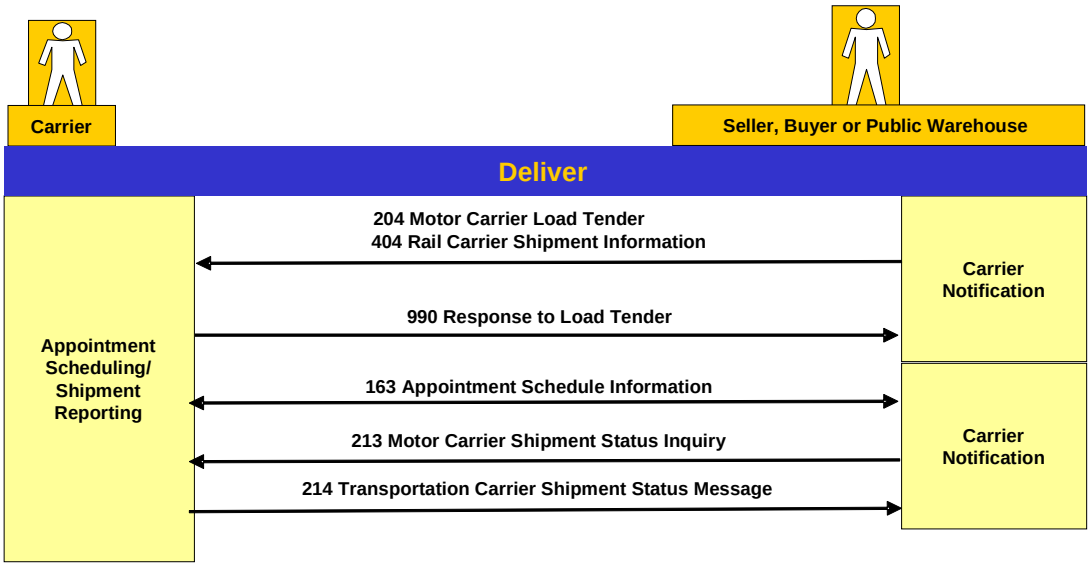
The complex network of truckload, LTL, rail car and small package delivery carriers creates a number of transportation related communication opportunities that can readily be enabled through electronic business messaging. Several transportation models are summarized below. They include:

- Load Tender and Shipment Reporting – Truckload Carrier
- Load Tender and Shipment Reporting – LTL Carrier
- Load Tender and Shipment Reporting – Small Package Carrier
- Consolidators
- Shipment Processing and Maintaining Inventory at a Public Warehouse.

3.2.1 Load Tender and Shipment Reporting – Truckload Carrier

Figure 3B – Load Tender and Shipment Reporting – Truckload Carrier, illustrates how the transportation business messages are used in communicating shipment tender and reporting information for truckload carriers. A **Motor Carrier Load Tender (204)** transaction set is used by the entity responsible for arranging the transportation to tender a shipment to a truckload carrier. This transaction set may also be used to forward shipment details or serve as a bill of lading for the truckload carrier. In situations where transport is by rail car, the sender would use the **Rail Carrier Shipment Information (404)** business message instead. The carrier responds to the offer through the **Response to Load Tender (990)** message. The **Motor Carrier Shipment Status Inquiry (213)** is used by the seller, public warehouse and buyer to solicit shipment status information from a motor carrier. The **Transportation Carrier Shipment Status Message (214)** is used by the transportation carrier in response to inquiry and to proactively provide pickup, in-transit information and final delivery status of shipments to the entity responsible for the transportation of the shipment. The **Transportation Appointment Schedule Information (163)** business message is used by the transportation carriers and their trading partners to request and accept freight pick-up and delivery appointments. The party receiving this request then replies with another **Transportation Appointment Schedule Information (163)** to grant or modify the appointment. This business message can be used by either party to change or cancel an appointment.

Figure 3B: Load Tender and Shipment Reporting– Truckload Carrier



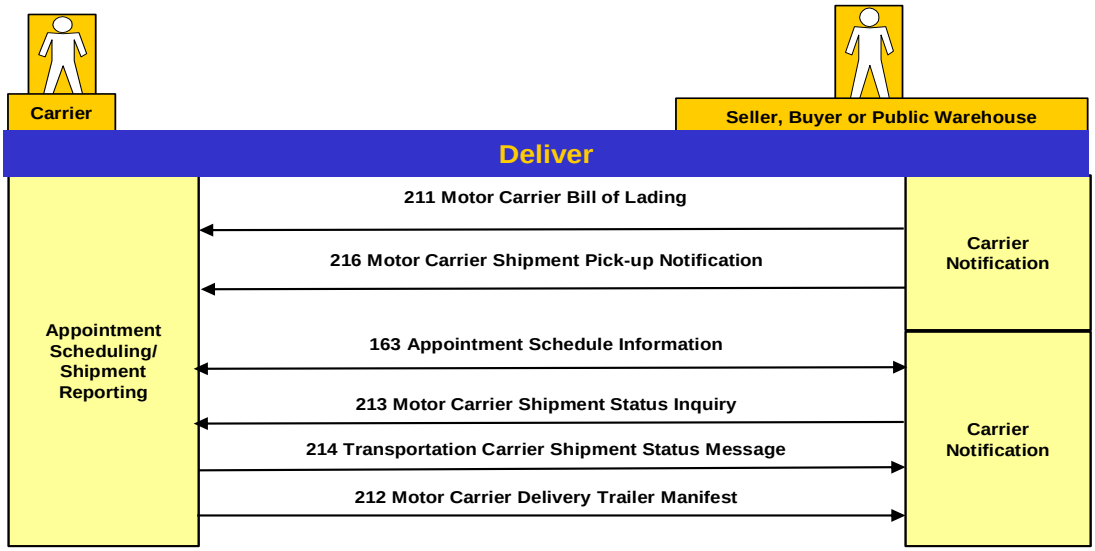
3.2.2 Load Tender and Shipment Reporting – LTL Carrier

Figure 3C – Load Tender and Shipment Reporting – LTL Carrier, shows how the deliver business messages are used in communicating a bill of lading, shipment details and shipment reporting information to less than truckload carriers (LTL). A **Motor Carrier Bill Of Lading (211)** is used by the entity responsible for arranging the transportation to provide a legal bill of lading for a shipment to an LTL carrier. This business message may also be used to forward shipment details for the LTL carrier. The **Motor Carrier Shipment Status Inquiry (213)** business message is used by the seller, public warehouse and buyer to solicit shipment status information from a motor carrier. The **Transportation Carrier Shipment Status Message (214)** is used by the transportation carrier in response to inquiry and to proactively provide pickup, in-transit information and final delivery status of shipments to the entity responsible for the transportation of the shipment.

To automate the pick up notification function, the shipper transmits a **Motor Carrier Pick-Up Notification (216)** to an LTL carrier. The **Motor Carrier Pick-Up Notification (216)** replaces the traditional phone call to notify the carrier of shipment availability including pick-up time, destination, and pick-up appointment numbers. The **Transportation Appointment Schedule Information (163)** message is used by the transportation carriers and their trading partners to request and accept freight pick-up and delivery appointments. The party receiving this request then replies with another **Transportation Appointment Schedule Information (163)** to grant or modify this appointment. This transaction can be used by either party to change or cancel an appointment.

If an LTL carrier is making multiple deliveries from a single trailer, the carrier may provide a **Motor Carrier Delivery Trailer Manifest (212)** to the buyer. The **Motor Carrier Delivery Trailer Manifest (212)** includes all of the individual shipments identified by the PRO number and purchase order number. The **Motor Carrier Delivery Trailer Manifest (212)** is transmitted when the trailer doors are closed and ready for delivery to the consignee.

Figure 3C: Load Tender and Shipment Reporting – LTL Carrier



3.2.3 Load Tender and Shipment Reporting – Small Package Carrier

Figure 3D – Load Tender and Shipment Reporting – Small Package Carrier, illustrates how the deliver business messages are used in communicating shipment pick-up notification and reporting information for small package carriers. A **Motor Carrier Pick-up Manifest (215)** is exchanged by the entity responsible for arranging the transportation to notify a small package carrier of a shipment pick-up. This business message may also be used to forward shipment details or serve as a bill of lading for the small package carrier. The **Motor Carrier Shipment Status Inquiry (213)** message is used by the seller, public warehouse and buyer to solicit shipment status information from a motor carrier. The **Motor Carrier Package Status Message (240)** is used by the small package carrier in response to inquiry and to proactively provide pickup, in-transit information and final delivery status of shipments to the entity responsible for the transportation of the shipment. To automate the pick up notification function, the shipper transmits a **Motor Carrier Pick-Up Notification (216)** to a small package carrier. The **Motor Carrier Pick-Up Notification (216)** replaces the traditional phone call to notify the carrier of shipment availability including pick-up time, destination, and pick-up appointment numbers.

If a small package carrier is delivering a trailer load of multiple shipments into a distribution center, the carrier may provide a **Motor Carrier Delivery Trailer Manifest (212)** to the buyer. The **Motor Carrier Delivery Trailer Manifest (212)** includes all of the individual shipments identified by the PRO number and purchase order number. The **Motor Carrier Delivery Trailer Manifest (212)** is transmitted when the trailer doors are closed and ready for delivery to the consignee.

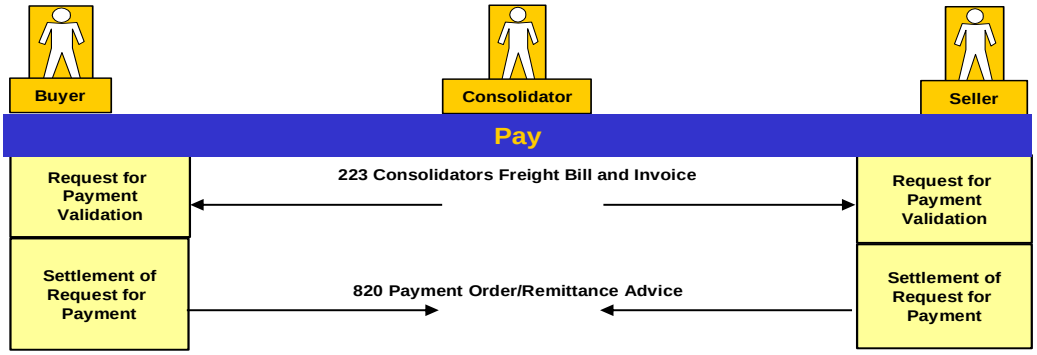
Figure 3D: Load Tender and Shipment Reporting – Small Package Carrier

3.2.4 Consolidators

The **Consolidators Freight Bill and Invoice (223)** is used by a consolidator to provide an invoice to the party responsible for payment of the freight charges and consolidator services.

A **Payment Order/Remittance Advice (820)** from either the shipper or consignee is expected.

Figure 3E: Consolidators



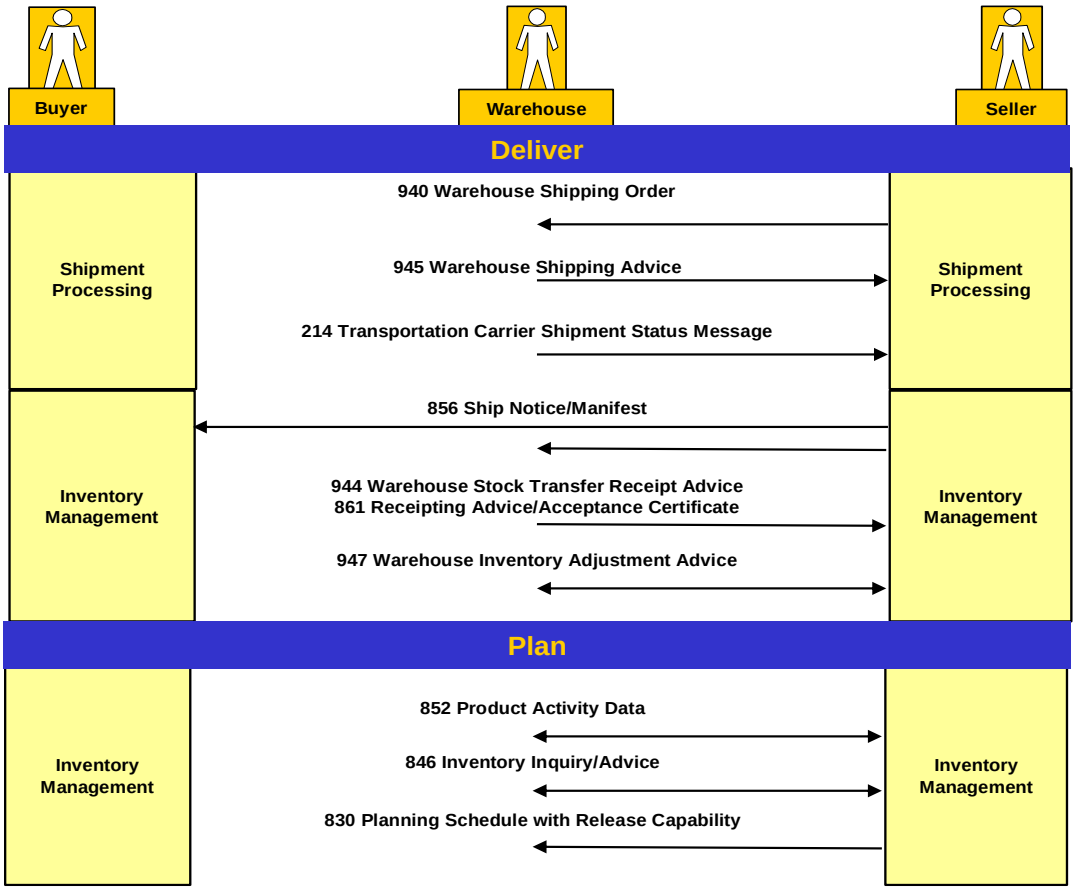
3.2.5 Shipment Processing and Maintaining Inventory at a Public Warehouse

Sellers may use public warehouses to store and ship product to buyers. **Figure 3F – Shipment Processing and Maintaining Inventory at a Public Warehouse**, shows the messages that are exchanged when the public warehouse ships to the buyer. The **Warehouse Shipping Order (940)** is used by the seller to authorize the public warehouse to ship product to the buyer. After a shipment is made by the warehouse, the **Warehouse Shipping Advice (945)** is used by the public warehouse to notify the seller that shipment was made and to provide the seller with information concerning the shipment, such as product cuts, substitutions and pallet identification. The information provided on the **Warehouse Shipping Advice (945)** can be used by the seller to communicate the shipment detail to the buyer in the **Ship Notice/Manifest (856).**

The **Transportation Carrier Shipment Status Message (214)** business message may be used by the warehouse to notify the seller of carrier shipping information prior to the creation of the **Warehouse Shipping Advice (945).** It may also be used by the warehouse to notify the seller of carrier delivery information after the **Warehouse Shipping Advice (945)** has been transmitted to the seller.

To maintain accurate inventory information the **Ship Notice/Manifest (856)** is transmitted from the seller to the public warehouse to notify the warehouse of a shipment of product from the seller's plant or producing location. When the product is received by the public warehouse, the **Warehouse Stock Transfer Receipt Advice (944)** is used to notify the seller that the shipment was physically received and to document the product and quantities actually received. Additionally, the **Receipting Advice/Acceptance Certificate (861)** can also be used for this purpose. The **Warehouse Inventory Adjustment Advice (947)** can be used by the seller or the warehouse to notify the trading partner of inventory adjustments. The **Product Activity Data (852)** business message can be used by the seller or warehouse to transmit changes in inventory over a period of time. The **Inventory Inquiry/Advice (846)** message is used by either the seller or warehouse to transmit product inventory information to the other party. The **Planning Schedule with Release Capability (830)** may be transmitted by the seller to the public warehouse to communicate the seller's customized pallet configuration requirements.

Figure 3F: Shipment Processing and Maintaining Inventory at a Public Warehouse



3.2.6 Buyer Managed Transport

Historically, the supplier arranged for transport of the products to the buyer. Third party transport providers have played a critical role in the movement of product, especially international movements due to the complexity of rules and regulations and the complexity of importing product.

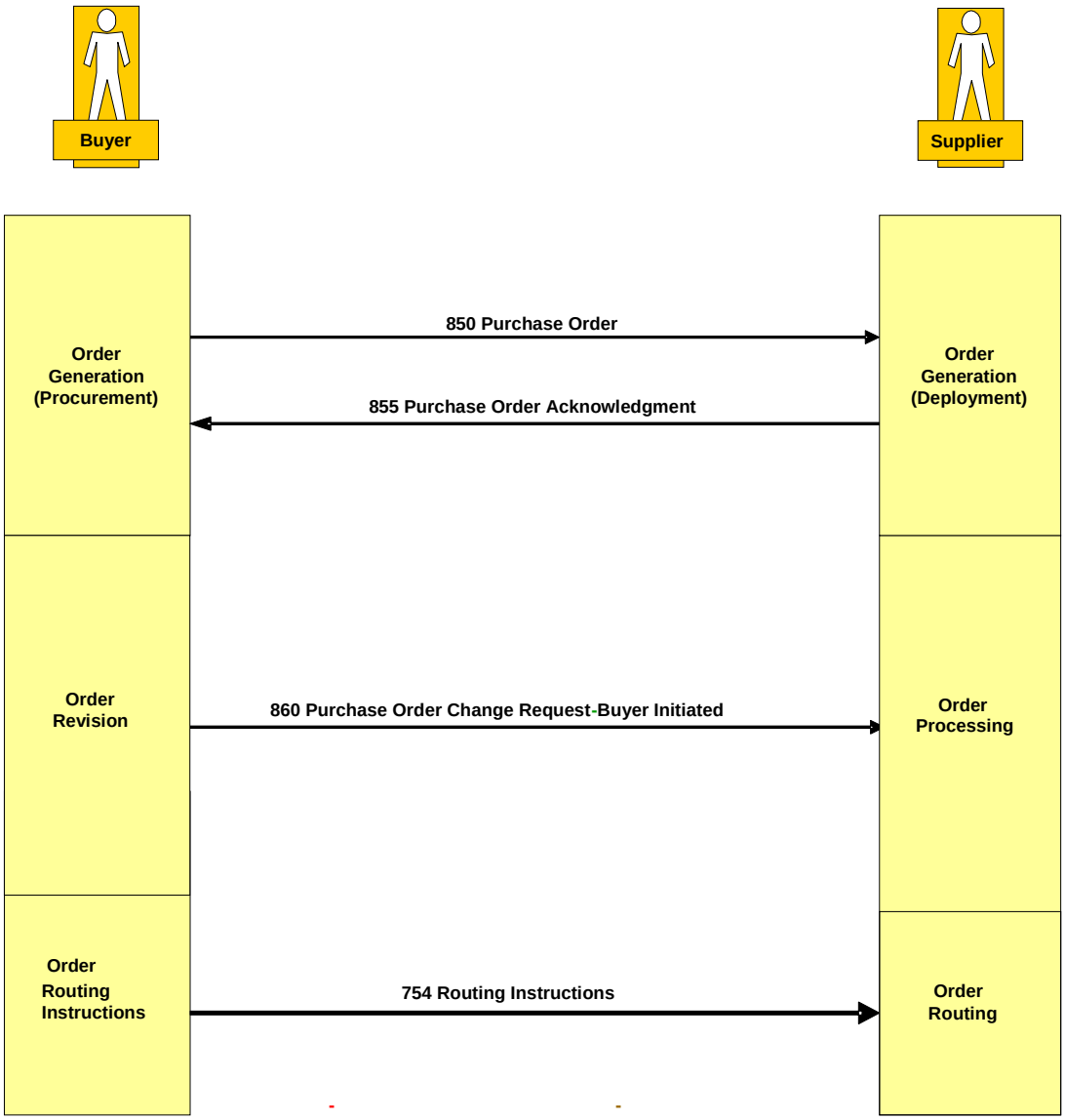
As transportation costs have grown to be a significant cost to a business, there has been a growing trend on the part of buyers to take more control over the transport process, including the movement of product from overseas as well as into and out-of warehouses. This includes manufacturers dealing with their suppliers.

The **850 Purchase Order** transaction conveys the purchase to the supplier. The supplier responds with an **855 Purchase Order Acknowledgment** back to the buyer.

As changes are applied to the order, the buyer initiates an **860 Purchase Order Change – Buyer Initiated** transaction to the supplier. It is assumed that the supplier applies the changes to the order.

As time of shipment approaches, the buyer sends the **754 Routing Instructions** transaction to the supplier.

Figure 3G: Buyer Managed Transport Business Model



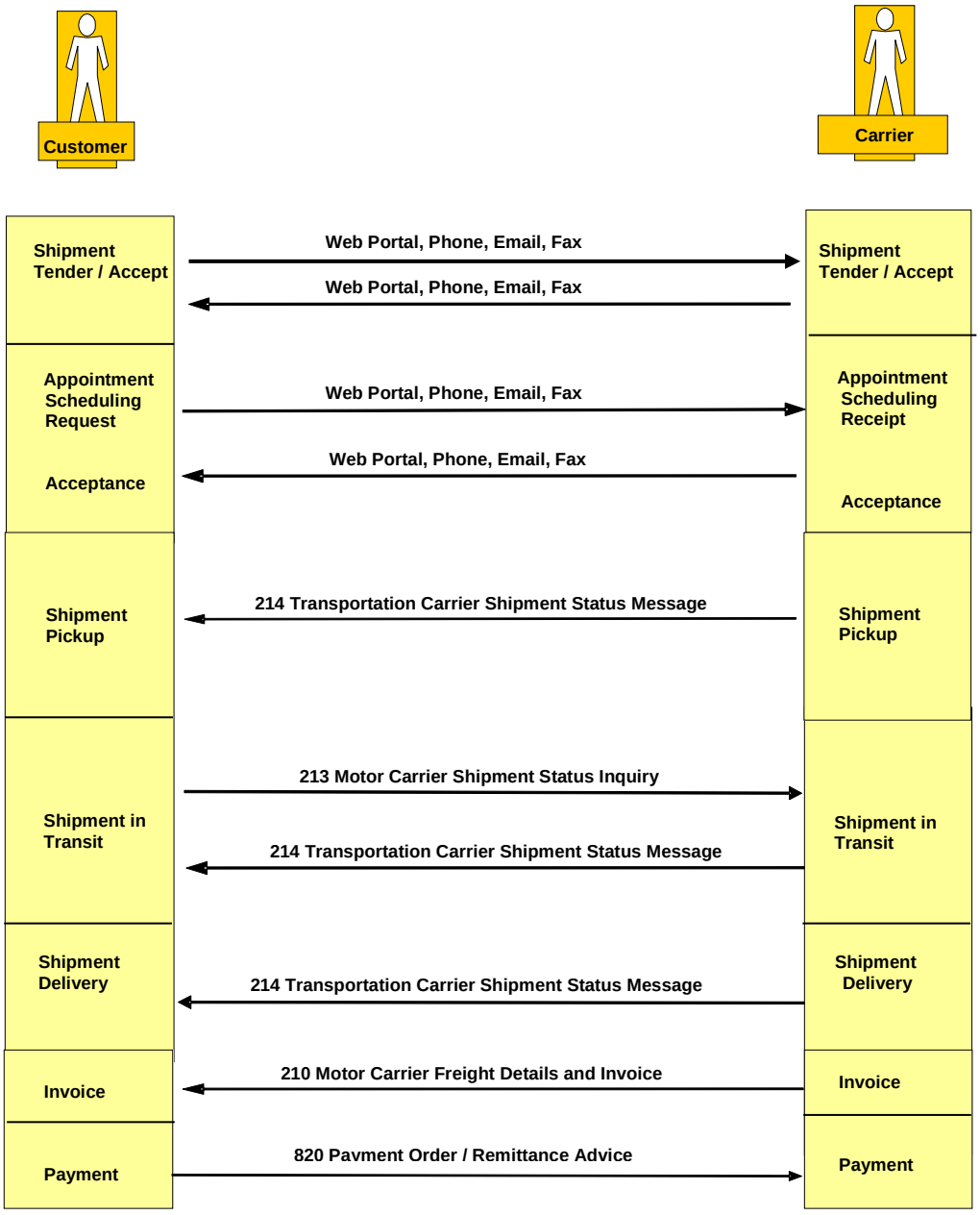
Black UCS, VICS EDI Only Green VICS EDI Only Blue UCS Only

Red VICS EDI, I/C Only Brown UCS, VICS EDI, I/C

3.2.7 Air Delivery Transport – Small Package Delivery

There are scenarios when an item is shipped by air freight.

Figure 3.H: Air Deliver Basic Business Model – Small Package



Black- UCS, VICS EDI Only Green- VICS EDI Only Blue- UCS Only
Red- VICS EDI, I/C Only Brown- UCS, VICS EDI, I/C

Air Deliver Basic Business Model – Small Package

Business Process Steps

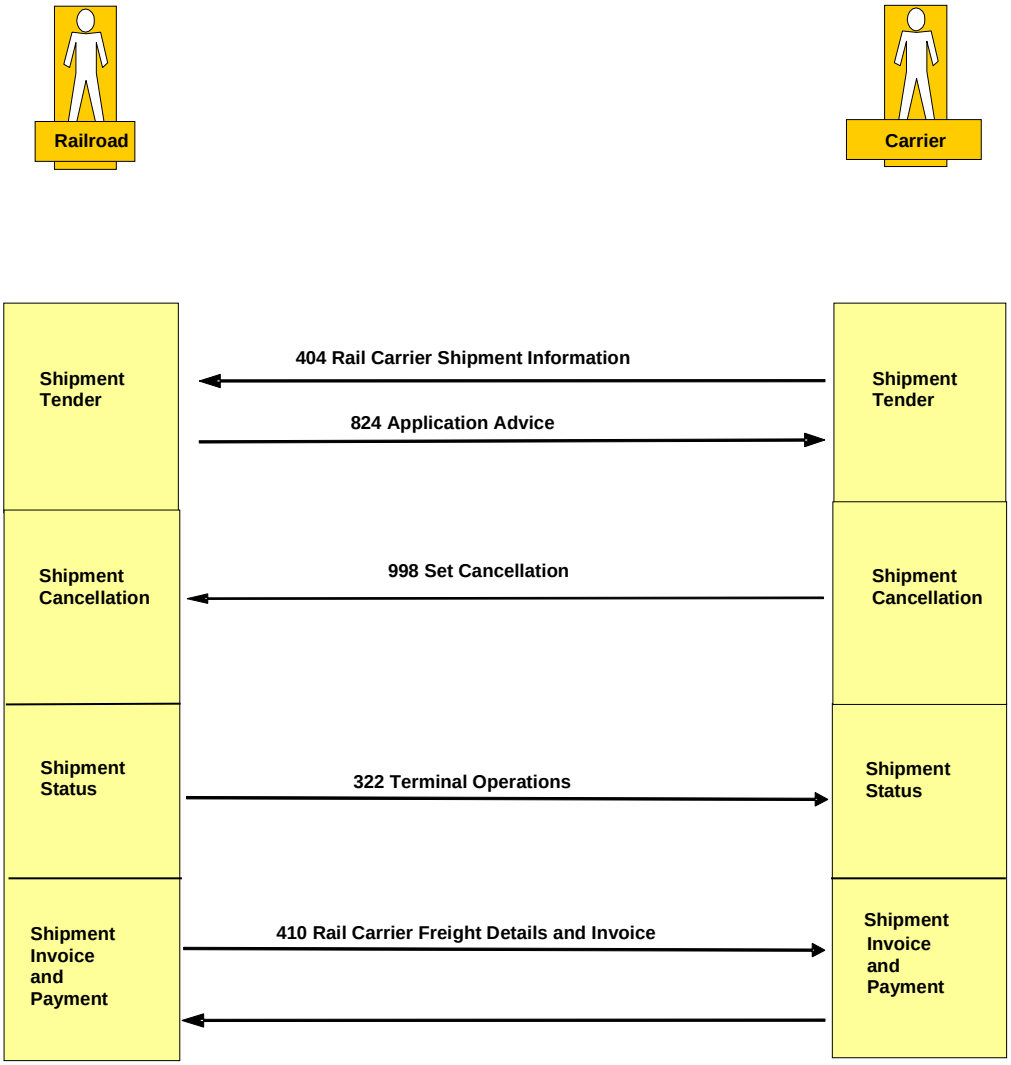
- Shipment Tender / Accept
    - The Customer contacts a Carrier using a web portal, phone, or fax. The Carrier responds with an acceptance message.
- Appointment Scheduling / Request-Acceptance
    - The Customer location may have a regular pick-up schedule or the Customer may phone, fax or use a web portal to request a package pickup. The Carrier responds to the pick-up schedule request.
- Shipment Pickup
    - When the package is retrieved, the package barcode is scanned by the courier. This begins the movement tracking of the package.
        - The barcode is used to provide package identification and tracking, and enables status updates using the ASC X12 EDI 214 Transportation Carrier Shipment Status Message.
        - For non-automated package pick-up, a paper air-way bill, with a unique barcode, is typically used with the package, which is scanned by the courier.
    - The packages are brought to a station, a ramp (station at the airport) or a hub, and sorted by destination/location.
    - A manifest may also be prepared. The data components may include:
        - Reference Number
        - Order Number
        - Tracking Number
- Shipment In-Transit
    - As the package moves from location to location, any person or automated process that handles the package will also scan it.
        - The ASC X12 EDI 214 Transportation Carrier Shipment Status Message can be sent on a pre-defined schedule to the customer if the customer is set-up to receive updated in-transit information.
        - For a customer that has not set-up a pre-defined notification schedule, that customer may send an ASC X12 EDI 213 Motor Carrier Shipment Status Inquiry to the Carrier to request the current package status. The Carrier would follow with an ASC X12 EDI 214 Transportation Carrier Shipment Status Message transaction set.
    - Package status information provided would typically include:
        - Origin Pick-up location
        - In-Transit (at station, ramp or hub) information
            - Departed location with date/time
            - Arrived location with date/time

- Shipment Delivery
    - The final status occurs when the package is delivered.
    - Should delivery not be completed, there are exception statuses that can be provided, such as:
        - No one is home
        - Weather delay
        - Refused

- Invoice & Payment
    - Invoicing for air shipments is typically combined with ground invoicing, using the ASC X12 EDI 210 Motor Carrier Freight Details and Invoice transaction set.
        - For Air alone, the ASC X12 EDI 110 Air Freight Details and Invoice would be used.
    - Payment may be generated by using the ASC X12 820 Payment Order/Remittance Advice transaction set. This transaction may be used to initiate an electronic funds transfer (ACH) or check payment.

3.2.8 Rail Delivery Transport

Figure 3I: Rail Delivery Basic Business Model



Black- UCS, VICS EDI Only **Green- VICS EDI Only** **Blue- UCS Only**
Red- VICS EDI, I/C Only **Brown- UCS, VICS EDI, I/C**

Rail Deliver Basic Business Model

Scenario

- Business process pertains to an entire train, from one origin to one or more destination points. This also accommodates a less than full car/container situation.
- A train may be comprised of multiple containers/cars, which are typically from different rail carriers.
- One shipment, one carrier, 'n' invoices using a primary carrier who handles the shipment arrangements with the railroad. One shipment number is assigned for all of the carriers/containers destined to a location.

Business Processes

- Shipment Tender / Accept
    - The **404 Rail Carrier Shipment Information** transaction set is used to transmit rail carrier-specific Bill of Lading information to a railroad. It is the initial tender of a shipment between a consignor and a rail carrier, and can be used as notification of equipment release and/or a legal Bill of Lading. The carrier has a load for the train.
    - The Carrier sends the **404 Rail Carrier Shipment Information** transaction set to the railroad. The transaction provides pick-up notification with commodity information.
    - There may be scenarios where the Supplier contacts the railroad.
    - The **824 Application Advice** transaction set may be used to acknowledge, accept or reject the shipment.
- Shipment Cancellation
    - There may be circumstances when it is necessary to cancel the waybill, which effectively voids the previously transmitted **404 Rail Carrier Shipment Information** transaction set. The **998 Set Cancellation** message must be sent before the shipment is loaded onto the train.
- Shipment Statuses
    - The **322 Terminal Operations** message is used to provide shipment statuses from the Rail Carrier to the Truck/Ocean Carrier, and on to the Buyer (customer).
    - Status Events include:
        - Import scenario via Ocean Carrier
            - Loaded on Rail (315 Inbound)
            - In Gate
            - Polling (GPS position capture)
            - Off Loaded
            - Out Gate
        - Domestic scenario
            - Loaded on rail
            - Arrived at rail yard
            - In Gate
            - Polling (GPS position capture)
            - Off Loaded

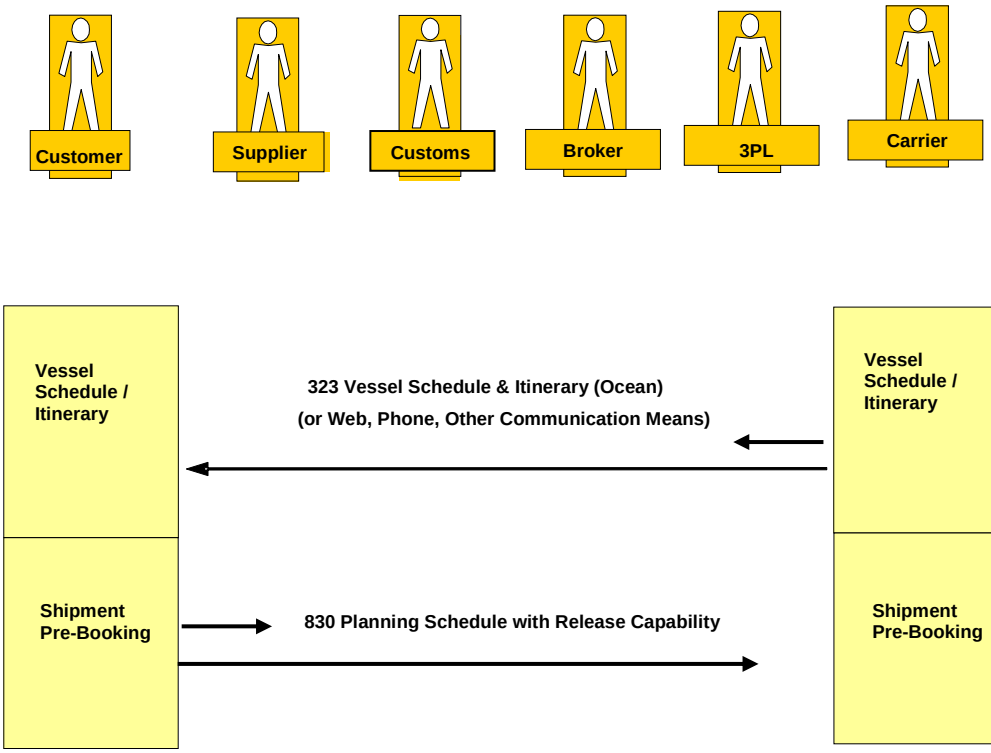
        - Out Gate
        - Notification – Read at rail yard
    - Rail to Truck
    - Truck to Rail
- Freight Invoicing and Payment
    - The **410 Rail Carrier Freight Details and Invoice** transaction set is used to present the request for payment. There can be multiple 410 Rail Carrier Freight Details and Invoice transaction sets against a **404 Rail Carrier Shipment Information** message from different Rail Carriers.
    - The **820 Payment Order/Remittance Advice** provides the payment and remittance detail.
- Claims
    - The **412** transaction set may be used to submit equipment damage claims.
- Customer contacts carrier using web portal, phone, or fax, with carrier responding.

Carrier (Ocean or Truck) to Customer Process

- The customer contracts with the truck or ocean carrier, who will handle the rail transport process.
- The truck or ocean carrier is responsible for coordinating transport of trailer/container with the rail.
- The truck or ocean carrier will use truck or ocean messaging to update the customer with the shipment status.

3.2.9 Ocean Import Delivery Transport

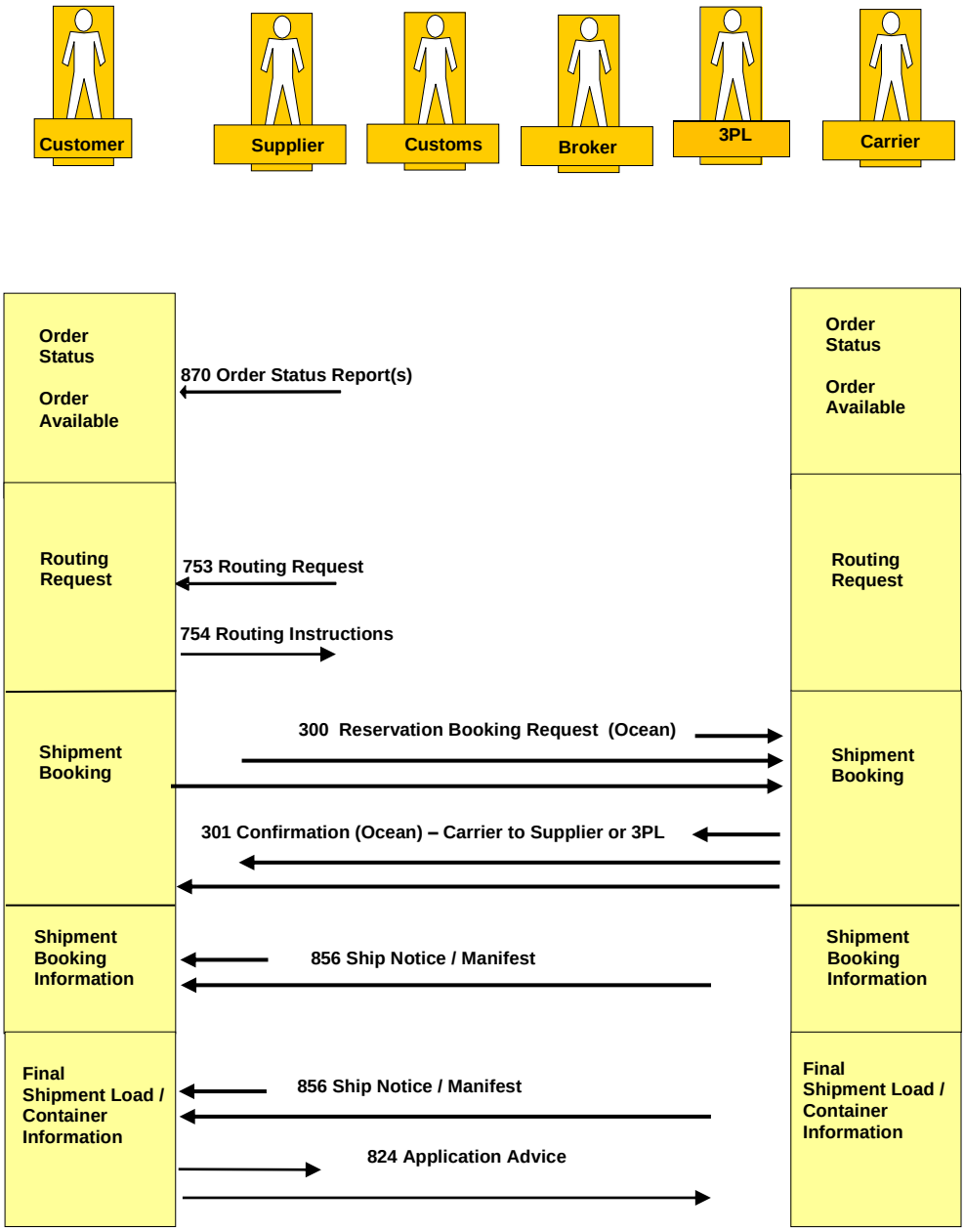
Figure 3J: Ocean Deliver Basic Business Model – Inbound/Import (1)



Black - UCS, VICS EDI Only Green- VICS EDI Only Blue- UCS Only

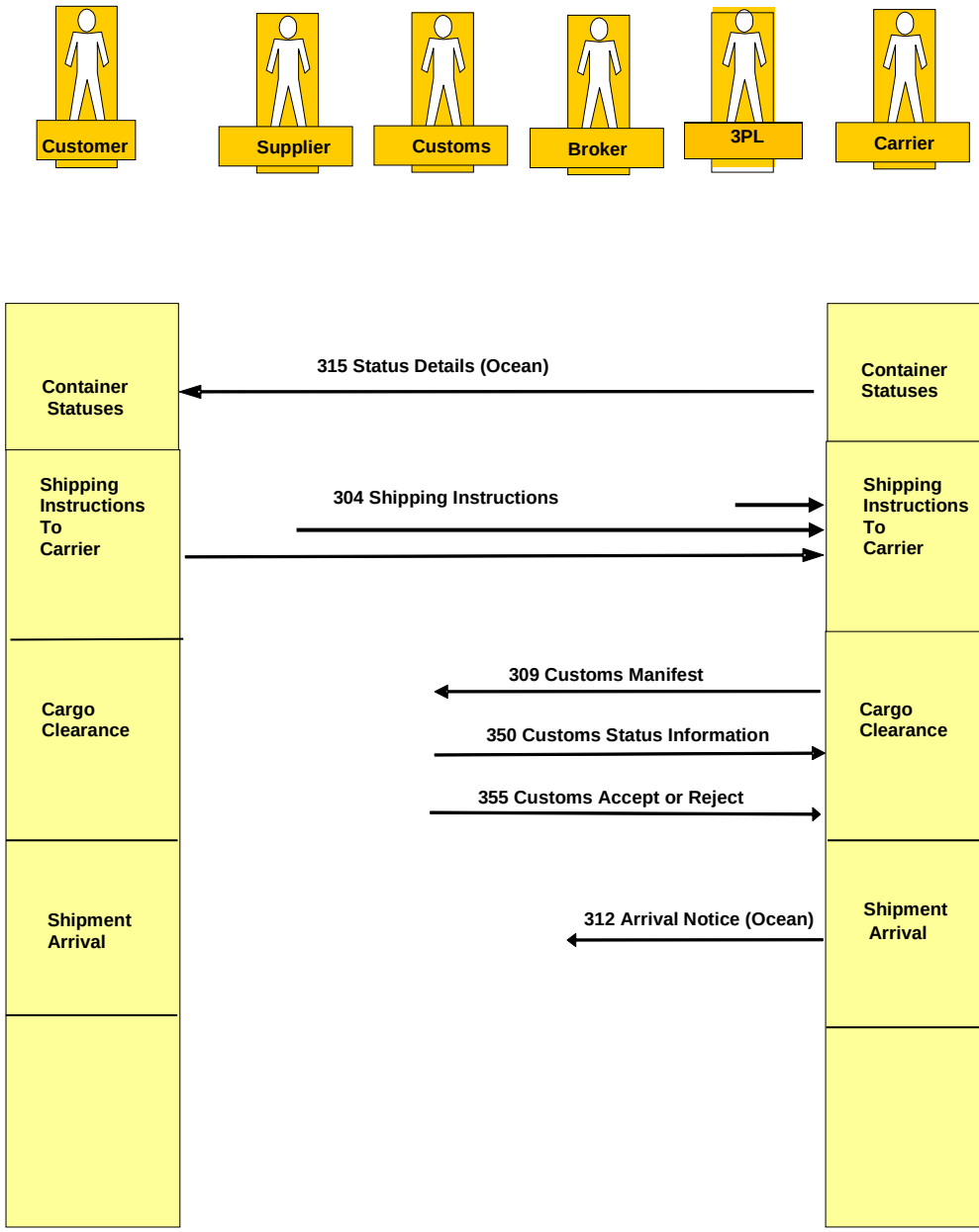
Red - VICS EDI, I/C Only Brown- UCS, VICS EDI, I/C

Figure 3J: Ocean Deliver Basic Business Model – Inbound/Import (2)



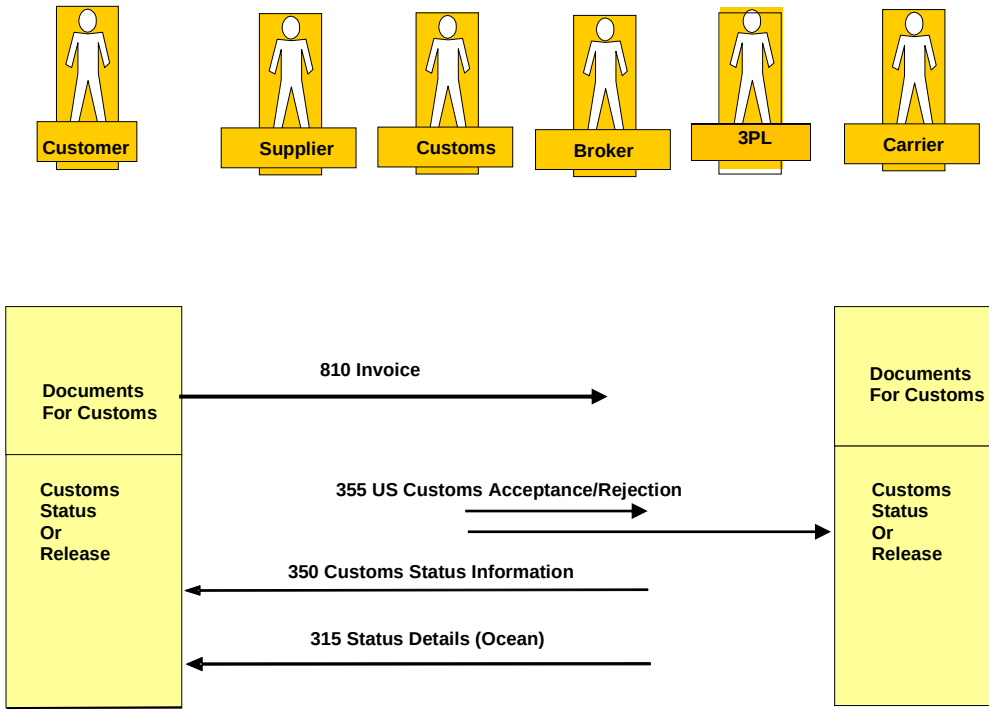
Black - UCS, VICS EDI Only Green - VICS EDI Only Blue - UCS Only
Red - VICS EDI, I/C Only Brown - UCS, VICS EDI, I/C

Figure 3J: Ocean Deliver Basic Business Model – Inbound/Import (3)



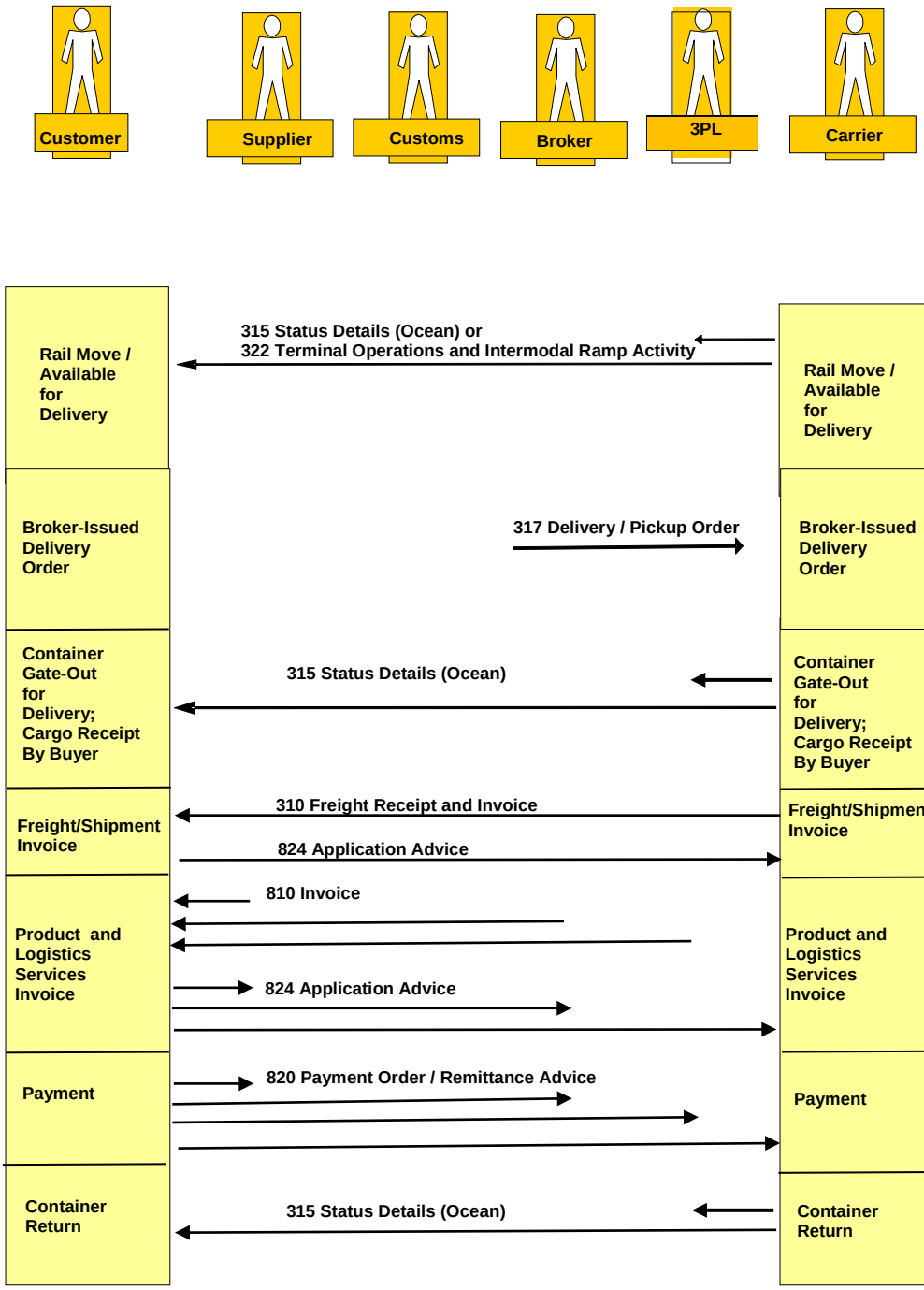
Black - UCS, VICS EDI Only Green - VICS EDI Only Blue - UCS Only
Red - VICS EDI, I/C Only Brown - UCS, VICS EDI, I/C

Figure 3J: Ocean Deliver Basic Business Model – Inbound/Import (4)



Black - UCS, VICS EDI Only **Green - VICS EDI Only** **Blue - UCS Only**
Red - VICS EDI, I/C Only **Brown - UCS, VICS EDI, I/C**

Figure 3J: Ocean Deliver Basic Business Model – Inbound/Import (5)



Black- UCS, VICS EDI Only Green- VICS EDI Only Blue- UCS Only
Red- VICS EDI, I/C Only Brown- UCS, VICS EDI, I/C

Ocean Deliver Business Model

Business Processes

- Pre-Deliver Processes for Inbound Shipments
    - Purchase Order and all order changes that impact the order statuses are shared electronically with the customer's 3PL to allow for shipment visibility. EDI transactions used (or similarly provided information means, such as web, 3rd party provided software, etc.) includes the 830 Planning Schedule with Release Capability, 850 Purchase Order, 855 Purchase Order Acknowledgment, 860 Purchase Order Change / Buy Initiated, 862 Shipping Schedule, 865 Purchase Order Change / Seller initiated, 869 Order Status Inquiry, and 870 Order Status Response for purchase order and shipment management.
    - Vessel Schedule and Itinerary information may be managed through the 3PL or use of 323 Vessel Schedule and Itinerary (Ocean) transaction set. Information is provided from the Carrier to the Customer.
    - The Supplier will sign-into the 3PLs web portal and enter the purchase orders and purchase order availability date for transport or provide copies of the 850 Purchase Order messages.

- Cargo Pre-booking
    - The Supplier/Buyer/3PL notifies the Ocean Carrier that a shipment will be available.
    - The 830 Planning schedule with Release Capability may be used by the Buyer to notify the Supplier of planned orders and delivery expectations.

- Order Status Updates
    - The 870 Order Status Report is used between the buyer and seller to communicate the status of the order process and provide order visibility.
- Shipment Routing
    - The Supplier confirms the purchase order availability.
    - The Supplier or 3PL will either request routing instructions (such as using the 753 Routing Request / 754 Routing Instructions) or review buyer-provided routing guides.
- Cargo Booking
    - The Supplier/Buyer/3PL notifies the Ocean Carrier that the shipment is or will be available.
    - The 300 Reservation Booking Request (Ocean) and 301 Confirmation (Ocean) are used between the parties.
- Booking Information and Final Shipment Information
    - The 856 Ship Notice/Manifest transaction set may be used to provide preliminary information about the shipment/voyage to the buyer. The information includes booking information: vessel name, voyage number, preliminary arrival information, etc.
    - The Supplier loads the containers and delivers the cargo to the port.
    - The Supplier provides manifest information to the 3PL or direct to the Buyer.
    - The final 856 Ship Notice/Manifest transaction set is typically sent after sailing and provides the final details of the shipment.
    - The 824 Application Advice may be used to communicate discrepancies with the 856 Ship Notice/Manifest information as identified by the Buyer. The 824 and 856 transaction sets may repeat multiple times until the information accurately reflects the shipment.
- Container Status Messages

- The 315 Status Details (Ocean) is used to convey the container status. There typically are multiple transactions, providing container status updates as the container continues in-transit.
- Statuses include cargo has gated-in at the origin terminal, loaded on vessel, cleared customs, etc. (Refer to the separate 315 Status Details (Ocean) document for guidance on recommended statuses.)

- Shipping Instructions to Carrier
  - The 304 Shipping Instructions is used by the Supplier/Buyer/3PL to provide shipping instructions to the Carrier.
- Cargo Clearance –
  - The Supplier clears cargo for export.
  - Exchange of information between carrier, customs and broker occurs prior to loading container on vessel.
  - The 309 Customs Manifest transaction is transmitted from the Carrier to Customs.
  - The 350 Customs Status Information or 355 Customs Acceptance or Rejection transaction is sent between Customs to the Ocean Carrier.
    - The Broker files the ISF (Importer Security Filing) with US Customs and Border Protection.
    - The CATAIR system is used by Brokers with US Customs.
    - If there are problems with the 309 Customs Manifest filing, Customs will notify the Ocean Carrier.
    - The shipment stays at its origin port until US Customs accepts the filing.
- Commercial documents are exchanged
  - A commercial invoice is issued to the 3PL or Buyer.
  - Other information presented includes
    - Shipment Bill of Lading information
    - Certificate of Origin
  - All documents are verified/cross-checked.
- Carrier notifies Buyer about expected cargo arrival
  - The 312 Arrival Notice (Ocean) transaction may be used to notify the broker about cargo expected arrival.
- Cargo goes through US Customs
  - The Buyer provides the broker with the commercial documents to file for cargo entry with US Customs and other governmental agencies.
    - The Buyer may transmit an 810 Invoice to the Broker, which is based off information from the 856 Ship Notice / Manifest.
  - The Broker files for entry with US Customs.
  - US Customs and other governmental agencies provide information regarding release or notification for further inspection.
    - US Customs may issue the 355 US Customs Acceptance/Rejection transaction to the Carrier and Broker.
    - The Broker may issue the 350 Customs Status Information (cargo release/hold information) to the Importer of Record and/or Buyer.
    - The 315 Status Details (Ocean) may be used to convey to the Importer of Record and/or Buyer that the shipment has cleared customs.
  - Other 315 Status Details (Ocean) is used to convey an 'Unloaded from Vessel' status.

- For Rail Moves: Rail Inland Intermodal Move
  - The Carrier delivers the cargo to the port of discharge

- 315 Status Details (Ocean) statuses sent are Loaded on Rail or Available on Rail Ramp, or the 322 Terminal Operations and Intermodal Ramp Activity may be used.

- Container Available for Delivery
  - The 315 Status Detail (Ocean) transaction is sent with a status of 'Available for Delivery'.

- Broker Provides Delivery Order
  - After the cargo is released, the broker issues a delivery order to the carrier.
  - The 317 Delivery/Pick-up Order is used between the Broker and the 3PL/Service Provider.
  - Other communications methods may be used, such as email, web or third party software.
  - This messaging confirms the delivery location of the container and all other governmental agency requirements have been met.

- Ocean service provider and domestic carrier exchange status
  - The 315 Status Details (Ocean) is used to convey the Container Gate-Out for delivery status from the Ocean Carrier to the Buyer or 3PL.
- Buyer Receives Cargo
  - The Buyer inspects the cargo to verify quantity, seal and container integrity prior to unloading.
    - The 315 Status Details (Ocean) is issued with a Container Delivered status.
    - The 214 Transportation Carrier Shipment Status Message may also be used.
- Invoice
  - A 310 Freight Receipt and Invoice (Ocean) is issued by the Ocean Carrier to the Buyer for the shipment.
  - An 810 Invoice is issued by the Supplier to the Buyer for the product.
  - An 810 Invoice is issued by the 3PL/Broker to the Buyer for logistics services.
  - The 824 Application Advice may be used as an acknowledgment to the invoice transaction.

- Payment
  - An 820 Payment Order/Remittance Advice or other form of electronic funds transfer is issued for payment.
- Container Return (Truck)
  - The domestic carrier returns the empty container/trailer to the service provider.
  - The domestic carrier issues a 214 Transportation Carrier Shipment Status Message.
  - The Ocean carrier issues a 315 Status Details (Ocean) with a status of Empty Return to Carrier.

3.3 Remittance Business Practice – Payment Scenarios

Parties intending to transact payment through EDI must consider two issues. First, will the payment and remittance advice be bundled or unbundled? When bundled, the payment and remittance advice are sent as a single business message to the bank. When unbundled, the payment and remittance advice are sent as two separate messages. The payment is sent to the bank and the remittance advice is sent directly to the trading partner.

Second, is payment to be made by EFT (Electronic Funds Transfer)? EFT options include credit automatic clearing house (ACH) transaction and FedWire, or by a debit ACH. When using credit ACH or FedWire, the buyer instructs the bank to make payment. When using debit ACH, the buyer authorizes the seller to draw funds for a specified account.

The combination of these choices creates four possible business scenarios. They include:

- Bundled Credit EFT
- Unbundled Credit EFT
- Bundled Debit ACH
- Unbundled Debit ACH

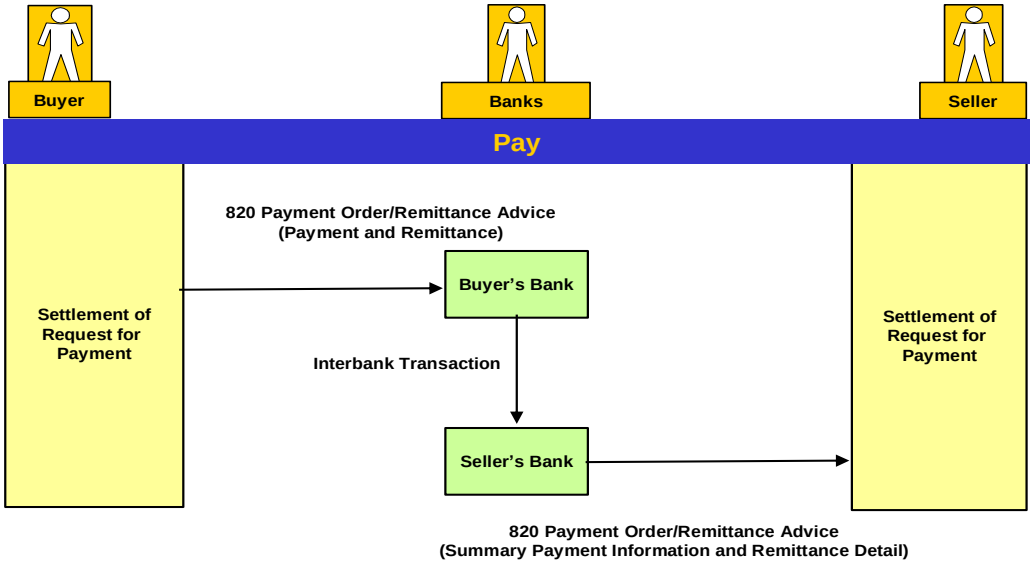
Also, financial institutions have expanded their services over the years to the concept of Value Added Bank (VAB). VAB services include allowing the payer to designate the method of payment (check, ACH, FedWire, international wire, etc.) as well as provide additional pre and post-processing of payment files. Other services include remittance file processing, updating of accounts receivable and payable files, and lockbox services.

All EDI-related bank services must be specifically agreed-upon between the financial institution and the EDI file originator or receiver. Additionally, to process an EFT transaction, the buyer must provide the seller with his bank account number and financial institution's transit routing number.

3.3.1 Bundled Credit EFT

As depicted in **Figure 3G – Bundled Credit EFT**, the buyer/payer transmits a single **Payment Order/Remittance Advice (820)** with payment and remittance detail information. The payer's bank releases an interbank transaction containing payment information to the seller's bank when payment is due. The receiving bank applies the payment to the seller's account, and transmits a **Payment Order/Remittance Advice (820)** to the seller, containing summary payment information and remittance detail.

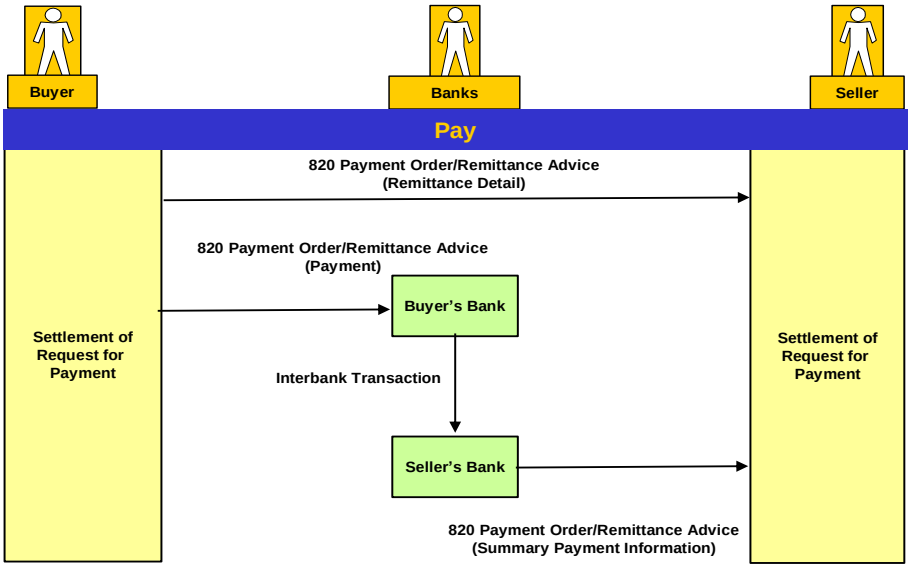
Figure 3G: Bundled Credit EFT



3.3.2 Unbundled Credit EFT

As shown in **Figure 3H – Unbundled Credit EFT**, the buyer/payer transmits a **Payment Order/Remittance Advice (820)** containing only the payment information to its bank, and a second **Payment Order/Remittance Advice (820)** containing with remittance detail information is sent to the seller. The payer's bank releases an interbank transaction containing the payment to the seller's bank when payment is due. The seller's bank applies payment to the seller's account and transmits a **Payment Order/Remittance Advice (820)** to the seller with summary payment information. The seller must then re-associate the remittance detail information received from the payer with the summary payment information received from the bank.

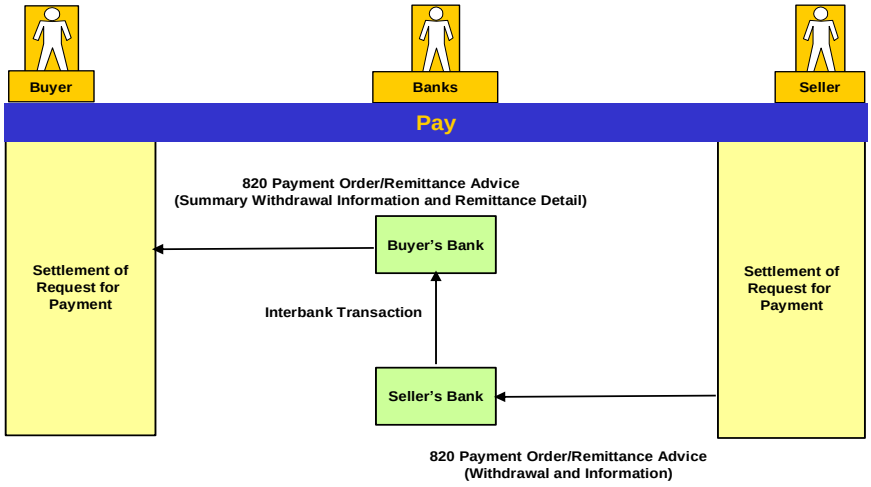
Figure 3H: Unbundled Credit EFT



3.3.3 Bundled Debit ACH

The buyer/payer authorizes its bank to allow the seller to withdraw funds from the buyer's account (under such conditions as the parties agree and the buyer's bank allows). The seller transmits a **Payment Order/Remittance Advice (820)** with withdrawal and payment information to its bank, which transmits an interbank transaction to the payer's bank, requesting that the buyer's account be debited. The buyer's bank transmits a **Payment Order/Remittance Advice (820)** with summary withdrawal information and remittance detail to the buyer/payer**.** **Figure 3I – Bundled Debit ACH**, illustrates this scenario.

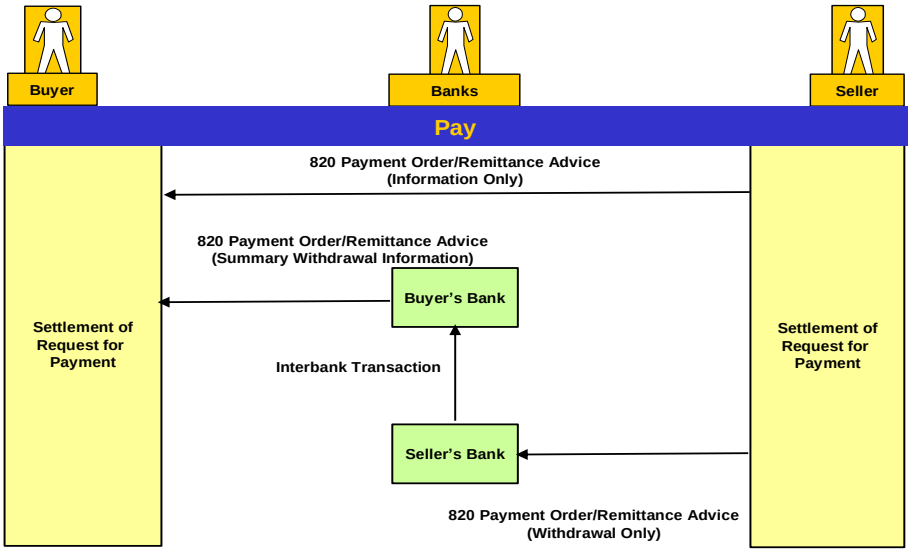
Figure 3I: Bundled Debit ACH



3.3.4 Unbundled Debit ACH

The buyer/payer authorizes its bank to allow the seller to withdraw funds from the buyer's bank (under such conditions as the parties agree and the buyer's bank allows). The Seller transmits a debit **Payment Order/Remittance Advice (820)** with withdrawal information to its bank, and a second **Payment Order/Remittance Advice (820)** containing only remittance detail information to the buyer. The seller's bank transmits an interbank transaction to the payer's bank requesting release of payment. The buyer's bank transmits a **Payment Order/Remittance**
Advice (820) to the buyer with summary billing information. The buyer must then re-associate the remittance detail information received from the seller with the summary withdrawal information received from the bank. This scenario is reflected in **Figure 3J – Unbundled Debit ACH**.

Figure 3J: Unbundled Debit ACH



3.4 Seller Managed Inventory Business Practice

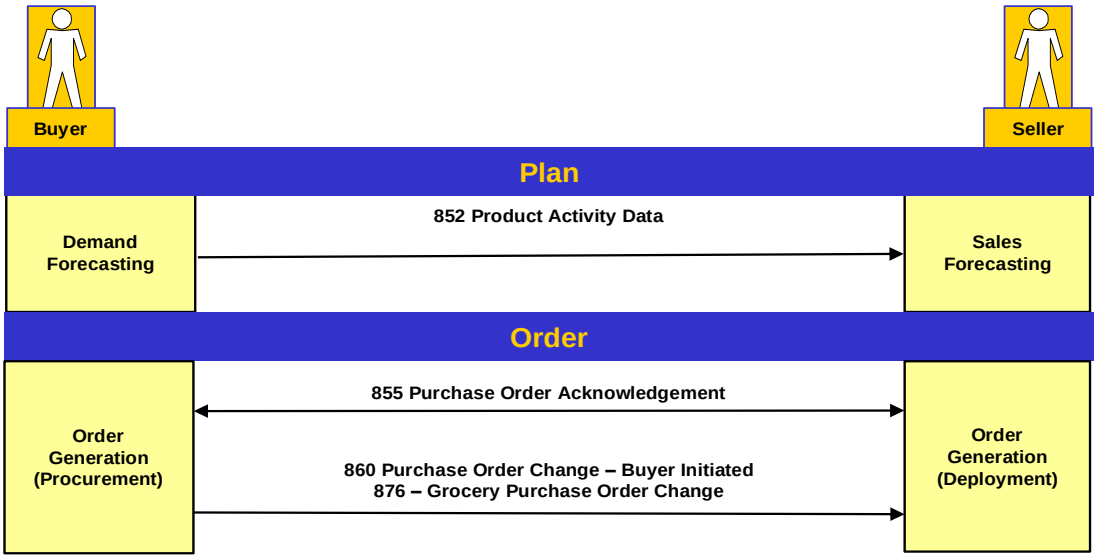
The seller managed replenishment business practices differ from the traditional Order-to-Pay process by placing responsibility for order creation on the seller, based on inventory movement information provided by the buyer.

Using appropriate planning tools, the seller suggests orders to the buyer based on predicted product movement. This suggested order is representative of the agreements made between the trading partners pertaining to days of on-hand inventory, safety stock objectives and minimum order quantities. The relationship may allow for the buyer to accept or modify the suggested order before reaching agreement on the quantity to be shipped.

Figure 3K – Seller Managed Inventory Business Practice, depicts the standard seller managed inventory process. Within the EDI platform, product movement information is communicated via the **Product Activity Data (852)** business message. The ordering function occurs with the seller's transmission of the **Purchase Order Acknowledgement (855)** business message to the buyer to represent the suggested order. The buyer has the ability to respond with the same document or can elect to use the **Purchase Order Change – Buyer Initiated (860)** message to communicate desired changes to the supplier's suggested order. The choice of messages used to manage the order change process is based on the EDI standards and agreements existing between the trading partners.

The rest of the Purchase Order to Payment business practice remains unchanged.

Figure 3K: Seller Managed Inventory Business Practice



3.5 Direct Store Delivery Business Practice

Figure 3L – Direct Store Delivery (DSD) Business Practice, presents a situation that considers a highly integrated flow of information that might occur when a new product is introduced by a pre-order DSD seller. The Order-to-Pay business practice previously outlines how critical product and price information is synchronized between the buyer and seller.

After the product has been accepted for distribution, the buyer stocks the shelf, using scanned sales information or physical inventory counts to create a **Grocery Products Purchase Order (875)** or a **Purchase Order (850)** business message for transmission to the seller.

In a DSD business process, the seller's representative visits the store, determines the product that is needed, pulls the product from the delivery truck, and stocks the shelves. To account for the purchase activity, using a hand-held device, the **Delivery/Return Base Record (894)** and the **Delivery/Return Acknowledgment or Adjustment (895)** messages are exchanged with the stores computer system using a physical or wireless transmission protocol.

An alternative DSD process has the seller's representative visit the store, determine what product is needed, and place an order for the product. Additionally, the representative determines what product will be returned, which is assigned GS1 SSCC (Standard Shipping Container Code) to identify the return load. Prior to delivery of the product a **DSD Shipment and Invoice (857DS)** message is transmitted to the buyer, which contains an SSCC to identify the order. If there are products to be returned, a **DSD Shipment and Invoice Returns Delivery (857RD)** message is transmitted to the buyer, which contains the same SSCC value as was previously provided by the seller's representative.

When the product is delivered, the product is checked-in using the SSCC value (allowing for a tare-level check-in process) that was provided by the **DSD Shipment and Invoice (857DS)** message. Any returning product is checked-out using the SSCC value from the **DSD Shipment and Invoice Returns Delivery (857RD)** message.

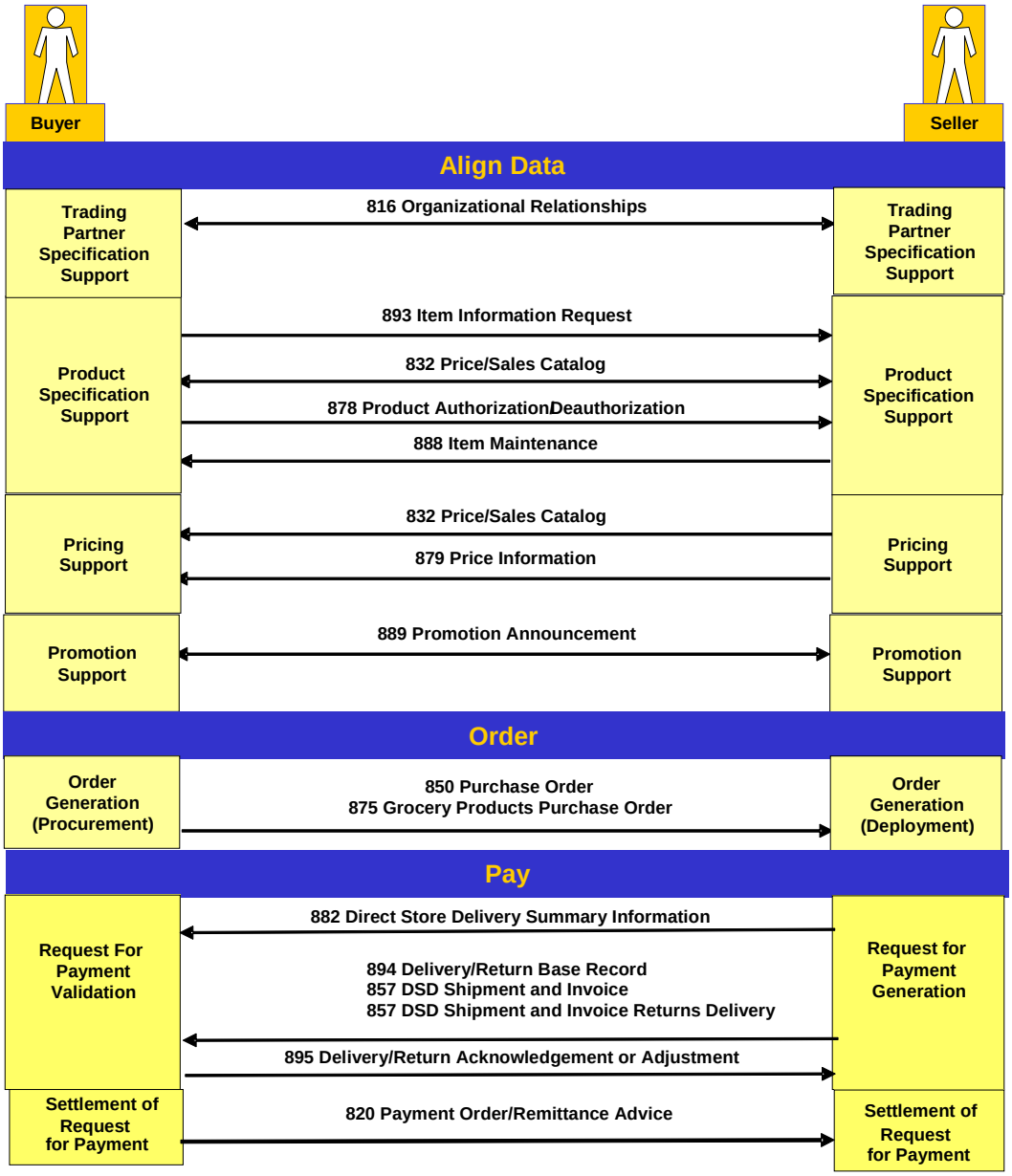
Additionally, the **Delivery/Return Acknowledgment or Adjustment (895)** message may be used as an acknowledgment to the **DSD Shipment and Invoice (857)** message, thereby using a combination of NEX (Network Exchange) and DEX (Direct Exchange) protocols,

With appropriate controls and systems functionality, and a collaborative working relationship, the NEX/DEX DSD combination process' objective is to provide for a quicker check-in / check-out procedure.

After delivery and prior to payment, the buyer transmits a **Payment Order/Remittance Advice (820)** message to the seller identifying details of the payment to be made, allowing the seller to reconcile the expected payment prior to cash application. A **Direct Store Delivery Summary Information (882)** business message can also be employed to support this relationship.

Due to high transaction volume in the DSD environment, this approach is more cost effective than transmitting details through the banking system. The payment is made through a second **Payment Order/Remittance Advice (820)** sent through the banking system. The merchandising ordering and financial functions have all played a key role in delivering product to the consumer in a cost effective and efficient manner.

Figure 3L: Direct Store Delivery Business Practice



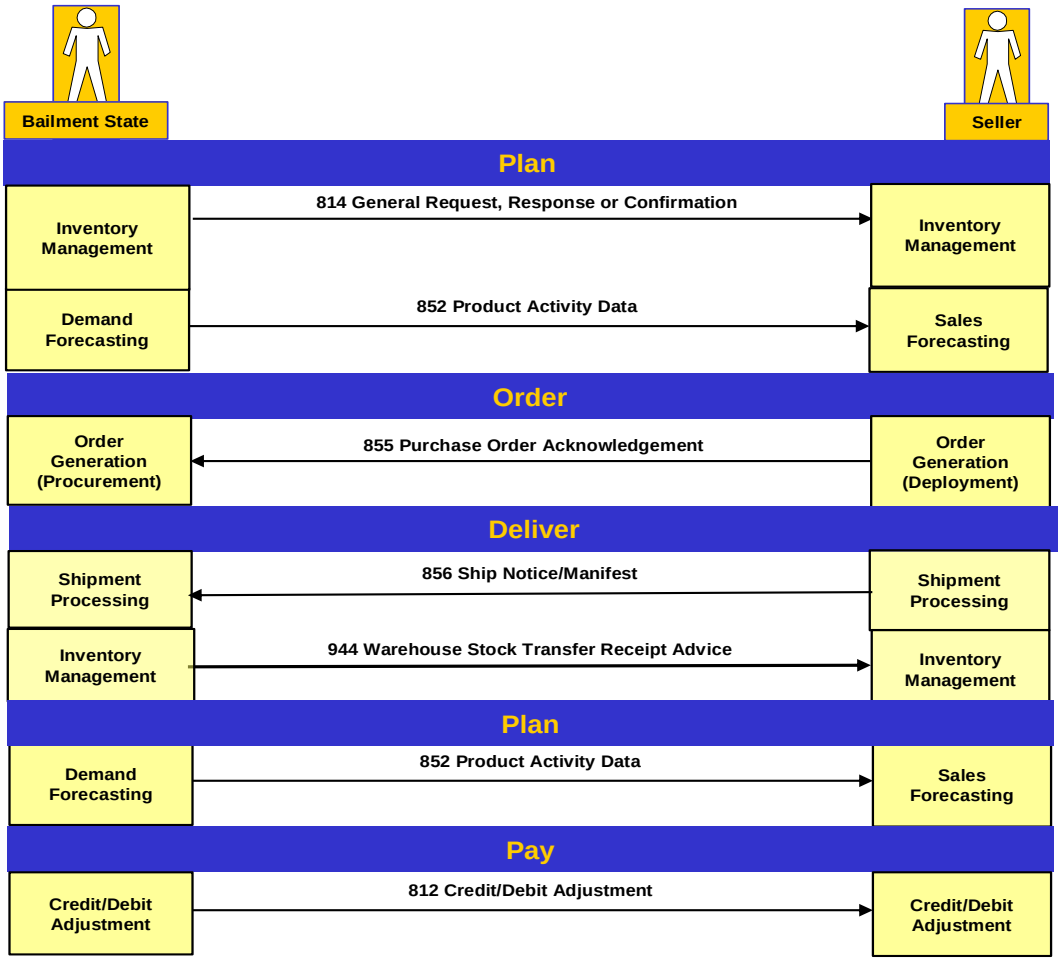
3.6 Bailment States Inventory Management Business Practice

Under bailment sales scenarios, as used in the alcohol beverage industry sector, ordering, logistics and financial functions are interconnected in a different manner. As shown in **Figure 3M – Bailment States Inventory Management Business Practice**, the bailment state transmits a **General Request, Response or Confirmation (814)** business message to the seller to request permission to take possession of the product stored in the bailment warehouse. The bailment state then transmits a **Product Activity Data (852)** message to the seller as notification that the control authority is taking ownership of product. When the seller's replenishment application has generated an order, based on the product activity data, the seller enters the order into his order processing system and transmits a **Purchase Order Acknowledgment (855)** to the bailment state.

When shipment is made to replenish the seller side of the warehouse inventory, the seller transmits the **Ship Notice/Manifest (856**) business message to the bailment state as notification that the shipment was made. The bailment state sends the **Warehouse Stock Transfer Receipt Advice (944)** business message to notify the seller of detailed information about the product received and matched against the previously sent ship notice/manifest. When the bailment state physically moves bailment inventory from its warehouse, another **Product Activity Data (852)** business message is transmitted to notify the seller of product movement.

The bailment state periodically transmits a **Credit/Debit Memo (812)** business message to notify the seller of the aggregate product shipped out of its warehouse to its stores. As outlined in the Order-to-Pay business practice, the seller may transmit one of the two invoice business messages to the buyer for payment.

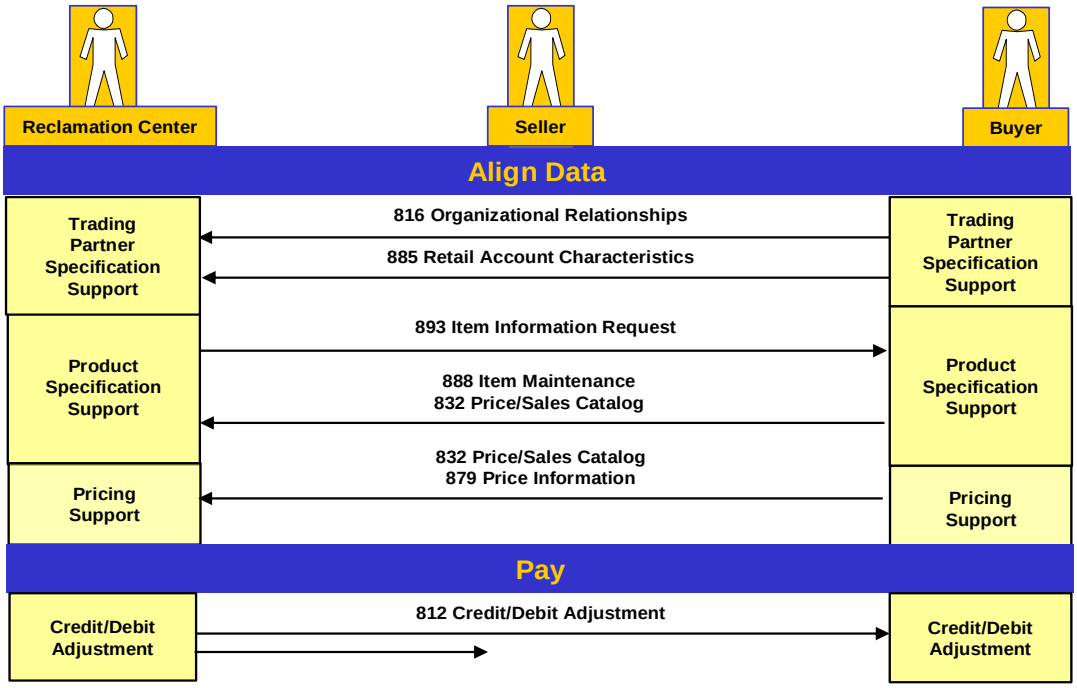
Figure 3M: Bailment States Inventory Management Business Practice



3.7 Product Reclamation Business Practice

Figure 3N – Product Reclamation Business Practice, depicts a typical reclamation cycle using EDI business messaging. The buyer transmits a **Retail Account Characteristics (885)** business message to identify pertinent store information and the **Organizational Relationships (816)** message to identify vendor information for each store to the reclamation center. The reclamation center can request GTIN (U.P.C.) information from the buyer by using an **Item Information Request (893)** business message. The buyer responds with both the **Price Information (879)** and **Item Maintenance (888)** business messages or the **Price/Sales Catalog (832), (**based on the standard used within the trading partnership, to refresh the reclamation center with GTIN and pricing information. The buyer's locations box, label and send the items to the reclamation center for processing. After the returned product has been identified and processed, the reclamation center sends the **Credit/Debit Advice (812)** transaction set to both the seller and to the buyer. Payment is made by the seller, utilizing the normal Order-to-Pay business practice.

Figure 3N: Product Reclamation Business Practice



3.8 Collaborative Planning, Forecasting and Replenishment Business Practice

To identify CPFR as a business practice would be a vast understatement. CPFR is better described as a business model that takes a holistic approach to supply chain management within a network of trading partners. CPFR in its fullest implementation uses virtually every element of the Basic Business Model described in Section 2 of this document. CPFR begins with an agreement between trading partners to develop a market-specific plan based on category management principles. Both partners agree to own the process and the plan. The plan fundamentally describes what is going to be sold, how it will be merchandised and promoted, in what marketplace, and during what time frame. This plan becomes operational through each company's existing systems, but is accessible by either party via existing approved communication standards. Both the seller and the buyer can adjust the plan within established parameters. Changes outside of the parameters require approval of the other party and may require negotiation. The plan becomes the critical input to the forecast. CPFR plans are rolled up, and the balance of the forecast (for non-CPFR) participants) is arrived at through forecasting models. A forecast may become frozen in advance, allowing trading partner automatic conversion into a shipping plan. When this approach is used between partners, customer order processing activities are avoided.

To eliminate days of inventory from the supply chain and facilitate exception processing, CPFR captures mission-critical information such as promotion timing and supply constraints.

The messages used to execute the CPFR activities include **Organizational Relationships (816)** and **Retail Store Characteristics (885)** to focus on party alignment. Item data alignment is managed through the **Price/Sales Catalog (832)** business message, **Product Authorization/Deauthorization (878)**, **Item Maintenance (888)** and **Product Dimension Maintenance (896)** business messages. The **Pricing Information (879)** business message aligns pricing information between the partners and the **Promotion Announcement (889)** share promotional data.

Planning and forecast information sharing within CPFR is done through use of the Planning **Schedule with Release Capability (830), Inventory Inquiry/Advice (846)** and the Product **Activity Data (852)** business messages. The first transaction shares forecast information. The inventory message is principally employed between finished goods manufacturers and their suppliers, while the Product **Activity Data (852)** business message share movement data between sellers and retail buyers.

When the order function is employed in CPFR, trading partners exchange either **the Purchase Order (850)** or the **Grocery Purchase Order (875)** business messages, as determined by the guidelines used in the partnership.

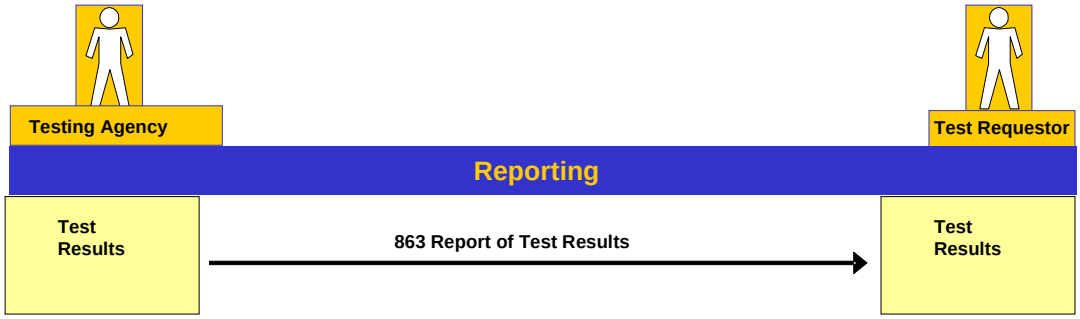
While these messages transport needed information to execute CPFR, companies should remember that success in CPFR is truly achieved through the establishment of a sound front-end agreement, clear performance measures, a shared expectation of success and positive negotiation.

3.9 Testing Services / Reporting

As part of a product's development process, there are tests that may be performed on the product to ensure its meeting certain standards, rules or guidelines for use. There are businesses that specialize in providing testing services. As part of the process, there is a need to return the test results back to the submitter. The **Report of Test Results (863)** message may be used to return test results to the test requestor.

The **Report of Test Results, Consumer Product Safety Act, URL Reporting (863 CU)** and **Report of Test Results, Consumer Product Safety Act, Full Reporting (863 CP)** allow sellers, distributors and testing services to provide Consumer Product Safety Commission required data on products used in the United States.

Figure 3O: Testing Practice



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4 e-Business Implementation Considerations

This chapter discusses the range of implementation concerns companies must address to implement electronically enabled business processes and practices, or to move from one business message technology platform to another.

4.1 Electronic Communication Considerations

Communication guidelines documented by the GS1 US have been designed to provide a practical and standard approach to the electronic exchange of data between partners. The objectives of the GS1 in creating its communication guidelines are to:

- Provide for the communication of EDI
- Identify alternative communication methods
- Specify the communication guidelines for industry use
- Provide operational guidelines for the use of the EDIINT-AS1and EDIINT-AS2 standards

One goal of the GS1 system is to provide communication methodologies to enable parties to exchange information between computers. The resulting communication guidelines specify the means of packaging EDI and transferring it from a sender to a receiver.

The following objectives are considered in developing the communication guidelines:

- The use of proven technologies that are generally available.
- Enable participation by both large and small business entities.
- Provide for implementation at a reasonable cost.
- Provide communication guidelines, which include recommended operational requirements such as network availability for incoming connections and encryption characteristics. These guidelines are defined in light of current operating environments.
- Provide data integrity and security that is equal to or better than current methods of operation.

EDI message standards allow users to convert business documents into a format that can be electronically exchanged. Such documents are referred to as “transaction sets”, “messages”, or “documents”, and their format is defined in the I/C, UCS and VICS EDI message standards. The exchange of these business documents is a component of overall e-Commerce. The communication guidelines provide for the exchange of EDI interchanges, transporting them from one company to another.

As e-Commerce evolves and additional solutions become available, it is important for organizations to incorporate new services into their infrastructure, while continuing to support their existing trading partnerships. It is expected that multiple communication options will be used within organizations including Internet exchange, web services, direct connections, eMarketplaces (Exchanges), and Value Added Networks (VANs). These blended models will facilitate the growth of the global trading community to meet various business requirements.

4.2 Computer Equipment for EDI

EDI can be implemented using mainframe computers, mid-range computers (e.g., AS400), client/server systems or personal computers (PCs), or any combination of these. For example, some companies install EDI translation software on a mainframe host computer used to run their internal application systems, and then send and receive EDI data using the host computer itself. Other companies use a host computer to interface with applications system, but upload and download flat files to a PC or a Local Area Network (LAN) server for translation and communication functions. Translation software requirements do not dictate the equipment used for EDI processing, since such software is available for all types of commonly used computer systems.

4.3 Communications

EDI data may be communicated directly between parties, or indirectly using third-party communications networks. Based on internal cost/benefit analysis, companies must determine which communications option to adopt or to employ a combination of direct and indirect communication methods. **Figure 4 – EDI Communications Options**, illustrates the basic communications options available.

4.3.1 Direct Communication Methods

There are two basic alternatives employed. In the first alternative the Sender and Receiver communicate directly with each other. Each partner controls its own communications system. In the second alternative, the Sender and Receiver communicate directly with each other via email messages using "attachments" (i.e., documents attached to the email message). An Internet Service Provider (ISP)/Web acts as the interface mechanism. The sender and receiver both control their own communications system to and from the ISP.

4.3.2 Indirect Communication Methods

There are three available options supporting indirect communication. In the first option, both Sender and Receiver use the same third-party Value-Added Network (VAN). VANs provide mailbox services to their clients. Typically, these services involve a monthly mailbox fee, as well as usage fees. These fees cover communications and client support, communications equipment, and systems personnel to maintain the network.

In the second option, each party uses their own preferred third-party VAN. When the sender and receiver use different VANs, there must be an "Interconnect" agreement between the two VANs in order for the transmission to move between networks. Most major VANs currently have these arrangements in place.

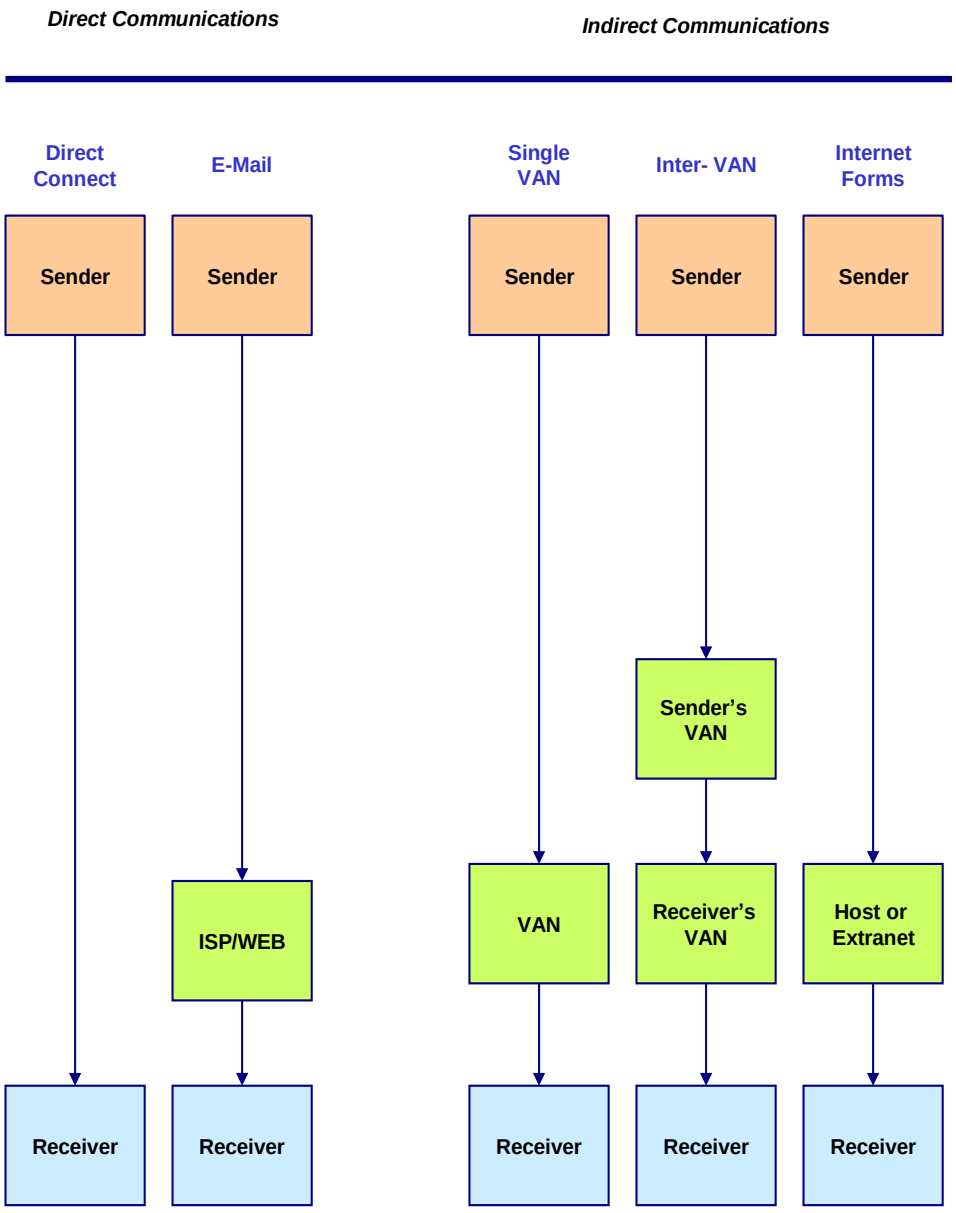
Finally, in the last option, the Sender and Receiver communicate via an extranet maintained by either the Buyer or Seller, or via a third-party hosted Internet website. The sender and receiver both control their own communications system to and from the extranet or hosted website.

4.3.3 Communication Using VANs

Companies may select a third-party VAN for various reasons, including:

- To accelerate initiation of EDI
- To minimize in-house equipment and personnel costs
- To effectively control the timing of transmissions
- To take advantage of additional services provided by a third-party VAN.

Figure 4: EDI Communications Options



Services provided by VANs might include translation within the network, archiving and retrieving of data, time-based transmissions to lower costs, summary tracking reports, and carbon copy facilities to send data to multiple destinations. Alternatively, companies may decide to communicate directly for cost, timing, and control reasons.

GS1 US, Inc. maintains a directory of third-party VANs and service providers for companies doing business in an EDI standards-based environment. This directory and other related documents are available from GS1 US and are listed in the Appendix under “Key Supporting Documents.”

4.3.4 Communications Via the Internet

Internet tools may be used by companies to facilitate EDI. Exchanging business information via the Internet is currently most commonly accomplished through the use of forms-based EDI or email attachments.

The Internet can be used to transmit standard EDI transactions as email message attachments. Unlike forms-based EDI, this method assumes both partners have computer systems able to receive and process standard, EDI file attachments. The primary benefit of this method is reduced EDI transmission costs, as transmission via a VAN is replaced by the use of email.

GS1 US has adopted standards for transmitting EDI transactions as email attachments. To use the email attachment method, both trading partners require translation software, data recovery methods, compatible encryption technology, and a secure method of data transport (SMTP protocol). The following example illustrates a basic transaction cycle using EDI sent as an email attachment:

1. The sending trading partner encrypts a standard, EDI transaction set and sends the data to its trading partner as an email attachment.
2. The receiving trading partner receives and decrypts the email attachment.
3. The decrypted data is then fed into and processed by a standard EDI translator program.

Typically, “hub” companies initiate forms-based EDI to facilitate EDI with smaller trading partners. Forms-based EDI applications are either hosted by a third-party service provider or offered by a trading partner via an extranet. To use forms-based EDI, smaller trading partners do not require traditional EDI systems or support. Generally, only an Internet-connected computer and browser software are needed.

The following example illustrates a basic transaction cycle using Internet forms-based EDI:

1. The initiating company, using traditional EDI, transmits a Purchase Order to a third-party Internet forms-based EDI provider.
2. The third party provider loads the purchase order information to their website.
3. The initiating company’s trading partner (e.g., the ultimate receiver) accesses the website and views the purchase order data. The trading partner prints or downloads/imports the data to process the order.
4. Upon shipping of product to its customer, the smaller trading partner keys information needed to create a **Ship Notice/Manifest (856)** and an Invoice on the third party web form. This information is fed to the third party’s systems.
5. The third-party provider creates a **Ship Notice/Manifest (856)** and **Invoice (810)** or **Grocery Products Invoice (880)** document and transmits the EDI business messages to the initiating company.
6. The initiating company receives the **Ship Notice/Manifest (856)** and the invoice using their standard EDI processing method.

FTP (**F**ile **T**ransfer **P**rotocol) is another method for transferring files between two computers using the Internet. This method allows a trading partner to use their computer to log in to their trading partner’s "remote" computer system and initiate the transfer of electronic files over the Internet. EDI files may be exchanged via the Internet using FTP. FTP allows EDI files to be deposited to or retrieved from a computer system accessible via the Internet.

4.3.4.1 EDIINT/AS2

Another protocol for transporting EDI transactions is EDIINT/AS2, as developed by the Internet Engineering Task Force (IETF). IETF's EDIINT/AS2 is a MIME (Multipurpose Internet Mail Extension) application with delivery receipt extensions. The MIME structure can be extended to allow for Secure/MIME (S/MIME). S/MIME provides for the encoding and decoding of the message for security reasons. Authentication is provided when a digital signature is used between the parties.

The transfer protocol specified for use is Hypertext Transfer Protocol (HTTP).

AS2 -

- Can securely carry EDI, XML, or binary records
- Uses the public Internet
- Uses the HTTP protocol
- Has been implemented by a number of independent software vendors.

Use of the AS2 protocol provides –

- Privacy – the document can only be viewed by the sender and receiver
- Authentication of the sender
- Integrity of the data based on the digital signature
- Non-Repudiation of receipt as the receiver's signed acknowledgment proves receipt.

For information on AS2, refer to http://www.gs1us.org.

4.4 Translation Software

EDI requires the use of software to translate the sender's internal data into the EDI format. Additionally, this software performs editing and control functions. The role of EDI translation software is summarized as follows:

For Outgoing Data:

- Converts proprietary data to the EDI format
- Generates required control segments and transmission envelopes
- Verifies that data meets EDI specifications based on the version of the standard being used
- Performs code and qualifier conversions from internal designations to those defined for use within EDI.

For Incoming Data:

- Reformats EDI data into internally accessible formats
- Validates transmission, functional group, and transaction set controls included in the EDI structure
- Performs compliance checks on data received based on the version of the standard transmitted
- Converts standard codes and qualifiers into meaningful information
- Generates a **Functional Acknowledgment (997)** for transmission back to sender
- Translation capabilities can be provided in a number of ways: A commercial translation package can be purchased or leased; software can be developed in-house; or translation can be done off-premises by a VAN or service bureau.

4.4.1 Commercial Translation Software Packages

The majority of companies implementing EDI either purchase or lease commercial translation software. Commercial translation packages are available for a variety of computer configurations, from mainframe to PC. Implementation objectives, timing, and cost play an important role in determining how translation facilities are provided. GS1 US maintains a directory of EDI translation software providers.

4.4.2 Turnkey Application Software & Services

For smaller companies, application software that is bundled with translation capability and access to a VAN or the Internet may be available. In this situation, the third-party service bureau provides many or all of the functions of an internal systems staff. They provide the linkages from the application system to the EDI standard, and they keep the software current with the published standard. They may also set up and maintain a company's electronic mailbox, and they may work directly with new trading partners to implement EDI. GS1 US maintains a listing of these providers; it is available on request.

4.4.3 Third-Party Translation Services

Some companies elect to perform translation entirely with a third-party service provider. In this scenario, the company sends data to the provider in non-EDI format (generally the format of the internal application producing the data). The third party translates the data into EDI format and transmits it to the trading partner. Subsequently, when data is received by the third party from the trading partner, it is translated from EDI format into the company's internal application format. The third party then places this received data in the company's electronic mailbox.

4.4.4 In-House Development

Translation software maintenance and support are more costly and complex than an initial look at the standard and its requirements might suggest. Time has shown that companies quickly abandon the notion of developing translation software themselves, unless they have other business objectives to sustain the development effort.

4.4.5 Translation Software Selection Criteria

EDI software is at the heart of any EDI operation. Important considerations for the selection of commercial translation software are:

- EDI standards supported (X12 EDI, EDIFACT, EANCOM, etc.)
- EDI transaction sets supported
- Support multiple versions of the standard
- Mapping facilities that minimize program development
- Interchange enveloping
- Control number generation and verification
- Compliance checking
- Code and qualifier conversion
- Acknowledgment generation
- Interface to third-party networks
- Installation and maintenance
- Degree of customization required
- Ability to interface with user application systems
- Adaptability to existing computer systems
- Effort required to add a new trading partner
- Effort required to implement a new transaction set or another standard
- Effort and timing required to upgrade to new versions of the standard
- Ability to accommodate interim approved standard revisions (for companies participating in pilot implementations)

Special Features and Services:

- Control and audit reporting
- Preparation of paper documents (if needed)
- Backup and restore capabilities
- Error handling procedures
- Event-driven EDI

Supplier Support:

- Availability of new standard versions
- Telephone hot-line assistance
- Training
- Implementation assistance
- User group sponsorship

Costs**:**

- Purchase and license fees
- Maintenance charges
- Training
- Consulting

4.5 Cost Considerations

4.5.1 Initial Implementation Costs

The direct costs associated with implementing e-Commerce capabilities are similar to those involved in installing a new or upgraded internal applications system. This section outlines cost factors in the areas of computer equipment, software, personnel and training.

4.5.1.1 Computer Equipment

e-Commerce is virtually hardware independent. It can be implemented on equipment ranging from large mainframe computers to microcomputers to PCs. If implemented on a company's host computer, additional computer equipment is needed only if the existing configuration does not have the capacity to run the translation software or XML parsers. If it is implemented using a front-end processor to the host computer, then minicomputer or microcomputer hardware is required. For a front-end configuration, software and hardware must be in place on both the host and the front-end computers in order to upload and download flat files.

4.5.1.2 Software

There are three alternatives for EDI translation software; it can be purchased or licensed from an outside supplier; it can be developed in-house; or it can be contracted to a third-party network or service bureau. The cost of developing translation software in-house must be calculated using a company's normal estimating tools and procedures. The cost of commercially available translation software will vary by the scale of the machine on which it operates and by the optional features selected. The cost of network translation usually entails an initial setup charge and usage charges for the translation service.

4.5.1.3 Communications

e-Commerce communications can be accomplished directly through one or more VANs, via email attachments, via the Internet, or using Internet-based forms. For direct communications, money must be budgeted for modems, telephone lines, computer ports, and long-distance telephone charges. In addition, money must be budgeted for the development of communications software or for the purchase or license of a commercially available communications package supporting EDI.

When using EDI in a VAN supported environment, a single modem, telephone line, and computer port are required to communicate with the VAN. VANs usually provide toll-free service to their clients or provide local access points as part of their service. VANs will provide software to communicate with them, but they may charge a purchase or license fee. Care must be taken to accurately estimate the volume of EDI data that will be exchanged with trading partners, so that ongoing communications costs can be anticipated and properly budgeted.

4.5.1.4 Personnel

Implementation of an e-Commerce program cuts across many different functional areas of a company. To be successful, it is imperative that the coordinated efforts and commitments of multifunctional teams be established. Successful implementation may change the demands on internal personnel resources. Some functional areas may experience a reduction in needed personnel while other areas may require an increase..

Once a plan has been initiated, the work of systems resources include installation of translation software, mapping application system data files to or from the standard, programming interface or bridge programs, and preparation of communication software and procedures. Some companies accomplish these tasks using in-house personnel,

while others may select independent consulting resources. To estimate staffing requirements, other e-Commerce users may be contacted to share their experience.

4.5.1.5 Training

Training expenses required will depend on the technical background of the staff and the degree to which outside resources are utilized. Several firms provide EDI training programs and many of the translation software and VAN providers offer training, either as part of their basic services or for an additional fee.

4.6. Operating Costs

4.6.1 Technical and Operational Support

New versions of EDI are published on a regular schedule. Each new version may require changes to translation software and interface programs. In addition, as a company adds new messaging capability, application systems will need to be modified to process the new information. Therefore, it is necessary for companies to commit systems resources to e-Commerce functionality on an ongoing basis. The extent of this commitment will vary, depending on each company's technical approach, and the addition of new trading partners and business messages.

4.6.2 Equipment and Communications

Depending on the initial approach taken to implement e-Commerce, changes may be required in computer and communication facilities to handle increased volumes, new trading partners, and additional business messages..

4.7 Organizing e-Commerce Business Projects

Perhaps the most important step in making a decision to implement business messaging is to secure high-level management commitment to the effort. Business messaging cannot be implemented through the efforts of a single business function. Many functions must work together to achieve a successful implementation. Therefore, it is important that top management support the effort, and that they communicate their support to the rest of the organization.

4.7.1 General Guidelines

Although the systems area is a key component in implementing business messaging, implementation should be user-driven and directed. Important business and resource decisions in other areas of the organization will impact the implementation effort. Business messaging should not be undertaken simply as an information systems activity. Top management must be involved to ensure adequate support is provided throughout the organization during the implementation. Each company must determine the appropriate level of management participation and which individuals will have decision-making responsibility and authority. In addition to assembling an effective project organization, successful business messaging implementation requires the development and execution of a basic project plan. Regardless of company size or type, there are some basic steps that should be followed to ensure a successful outcome.

4.7.2 Project Organization

Management participation can be achieved in a number of ways, ranging from the involvement of a single member of top management to the creation of a formal steering committee. If the steering committee approach is used, membership might include representatives from sales/marketing, accounting, purchasing, operations/logistics, legal, distribution, customer service, and systems. The steering committee fulfills the following functions:

- Shapes EDI strategy of the company.
- Empowers users in the EDI process.
- Creates a process for dealing with internal requests.
- Ensures continuity.
- Balances the goals of new development and ongoing operations.

The project should be undertaken as a team effort. The structure of the business messaging project team will be determined by both the size and type of the company as well as the resources needed for each individual project.

4.7.3 e-Commerce Leader

To be successful in implementing e-Commerce projects, a company should select an appropriate e-Commerce Leader. This person should possess a broad business background and understanding of the company's business processes. Primary duties of the e-Commerce Leader would be the responsibility of overseeing the successful implementation and maintenance of a company's business messaging efforts as well as interfacing with, handling all correspondence with, and educating the company's trading partners and internal resources.

4.7.4 Project Reporting

The business messaging project plan must provide for the timely reporting of activity and progress. While the manner in which reporting is accomplished will differ from company to company, project team meetings should

be scheduled at regular intervals to maintain project momentum and cooperation, and also to monitor progress with respect to predetermined timelines.

4.7.5 Education

Since changes will undoubtedly occur in internal business systems and procedures with the implementation of business messaging, the project team should provide for education and training at various levels of the organization. Special consideration should be given to the training of the users of the system or systems supporting business messaging. Since business messaging tends to be cross-functional, care should be taken to make sure that all company areas affected by business messaging are adequately trained and briefed. Any training that is done using external resources should be augmented by an internally developed and conducted training program tailored to the specific needs of the company or functional area.

There are many EDI focused seminars and conferences held throughout the country. Register and attend a GS1 US conference that is targeted to the retail industry. Contact the local standards management organization for a schedule of the seminars and conferences they provide. You can also contact translation software or VAN service providers for a list of seminars they hold pertaining to business messaging.

4.8 Implementation and Testing

Business message standards are not static. New versions of standards are published on a regular basis. These new versions may require changes to both the translation software and to interface programs. In addition, as a company adds new messages, application systems will need to be modified to process the new information.

Therefore, it will be necessary for companies to commit systems resources to their e-commerce effort on an ongoing basis. The extent of this commitment will vary, depending on each company's technical approach and business strategy, and its addition of new trading partners and messages.

As with internal application systems, e-Commerce applications also require resources to respond to system and format failures and to control and operate the system.

4.9 Implementation Planning

Detailed implementation requirements will vary from one company to another. However, based on the experience of many companies, there are a number of design and implementation elements that are essential to achieving a successful electronic business messaging implementation.

4.9.1 Business Objectives and Design

Since electronic messaging is primarily a business strategy rather than a computer system, it is important that company objectives and expectations be clearly identified, and that the impact of messaging on existing business policies and procedures be determined and agreed upon. Companies with many divisions might want to consider focusing on e-Commerce initiatives that will enable them to "get the most bang for their buck" while other companies might feel it necessary to consider the direction of key trading partners.

Some companies will include the development of company objectives and an e-Commerce business design as part of their cost/benefit justification study. Others will perform this basic task early in the messaging implementation process.

4.9.2 Reviewing Systems and Procedures

A complete analysis of current systems should be performed. Processes for creating business information should be documented and the flow of information should be identified. Internal policies and procedures affecting the use of business information should be included in the analysis. This might include the distribution of business documents, filing and matching requirements, retention rules, legal and security requirements, etc.

Using this information, the project team can determine the platform that should be integrated into existing systems and whether any current policies or procedures must be changed. The results of this review will also permit the development of a preliminary estimate of the effort required to achieve electronic messaging integration.

4.9.3 Reengineering For Business Messaging

Companies implementing business messaging will have the ability to automate processes currently done manually. If these processes are inefficient, they will still be inefficient with electronic messaging. Companies desiring to get the maximum benefit from this project must re-examine and re-engineer those processes to eliminate inefficiencies and improve their ability to provide a seamless interface with trading partners. There are a number of redesign goals in the re-engineering process. They include:

- Work Simplification - Tasks should be simple to the point that nothing can go wrong.
- Automation - Manual process may be better handled through automation.
- Concurrent Processing - Processes that occur serially might be handled in parallel.
- Minimizing Buffers - Buffers are only needed when processes are inefficiently coupled.
- Integrating Activities - It is sometimes possible to consolidate or combine activities.
- Single Contact Point - Entry into a process should be controlled by a single "gate-keeper".
- Process Variations - Within a process, variations may exist to accommodate different inputs.
- Results Measurements - Results must be measurable to allow for monitoring benefits.
- Flat Structures - Processes are more responsive when they have less hierarchical overhead.

4.9.4 Surveying All Participants

Depending on the size and type of a company, business messaging may impact many sites, such as sales offices and warehouses. In such cases, it is important to recognize the capabilities and limitations within which business messaging will be implemented. This recognition will help determine training requirements as well as the adequacy of existing personnel and equipment resources at the various sites. Such information can be gathered by questionnaire, actual visits or a combination of both methods.

4.9.5 Identifying Trading Partners

In order to achieve cost savings and operating efficiencies, a company must convert a significant percentage of its transaction volumes to an electronic business messaging structure. Many companies develop a plan for using this capability with a number of their trading partners during the initial implementation process. Trading partners that are EDI capable can be identified best through direct contact or by industry registry lists.

Once a list of potential trading partners has been developed, primary candidates can be identified based on such criteria as ranking by dollar or transaction volume, messaging capabilities, implementation status, etc. Selecting an initial partner and extension to additional partners are discussed later in this document.

4.9.6 Creating the Business System Design

After defining the business messaging strategy and functional characteristics, a detailed business system design document should be prepared by the project team. This document will set the direction for most of the other implementation activities.

4.9.7 Evaluating Technical Alternatives

We have previously discussed several key technical decisions which must be made when implementing EDI. These include:

- Whether to use a VAN, communicate directly or a combination
- How to evaluate and obtain translation software or services
- Whether to install the translation software on a company's host computer or on a smaller system or out source this function to a VAN or third-party solution provider
- Whether or not to acquire messaging capability as part of a turnkey application system.

There are a number of factors that could influence equipment, software and communications decisions. These include:

- The configuration of existing computer and communications equipment
- The utilization of existing systems
- The availability of internal technical resources for both initial implementation and maintenance
- Plans to add additional trading partners or new transaction sets, or both
- Budget and cost limitations
- The number of company locations to be involved
- The communications protocols and standards used by major trading partners.

4.9.8 Computer System Design

After all major decisions have been made in terms of the business design and equipment and software considerations, the computer design can be prepared. Elements that are generally addressed in such a design include:

- General systems narrative
- System data flow diagram
- Functional analysis
- Description of inputs and outputs
- Controls
- Security procedures
- Backup and restore specifications
- Program descriptions
- Detailed program specifications
- Data format specifications
- Communications specifications
- Operational and processing procedures
- Statistical and reporting specifications
- Impact on computer and communications facilities
- Legal/Audit requirements for data retention (e.g., IRS procedure 91-59).

4.9.9 Selecting Trading Partners

The criteria for determining an initial trading partner will vary from company to company. In many cases, this decision is an integral part of the decision to implement electronic business messaging. Business considerations, such as competitive pressures and business relationships between companies often impact a company's decision to implement ecommerce-enabled communications. However, an initial trading partner should be a company with which good business relationships exist and with which the development team is comfortable working. It is recommended that an initial trading partner be a company already experienced with the messaging format to be implemented. This experience will make testing and implementation less complicated and troublesome. Once the initial trading partner has been selected, implementation is coordinated with this partner. This can best be achieved by face-to-face meetings to ensure a mutual understanding of the information being passed to each other and how that information will be used by each other. These meetings may occur several times during implementation to share progress reports and re-examine business issues. If both partners are experienced business messaging users, the exchange of thoroughly documented process flows contained in an implementation guide may be sufficient.

4.9.10 Obtaining Contact Information

It is important to exchange contact information when a new messaging partnership is established. Ideally, each partner should provide a primary and a backup contact person in order to minimize the time to resolve a problem. Some companies may have multiple contacts, depending on the structure of their implementation. For example, there might be one contact in the programming area, another in the communications area and another in the user department.

4.9.11 Exchanging Communications Information

The following information should be exchanged between trading partners during the implementation planning stage:

- Communication standard involved
- VAN used, if applicable
- Modem telephone number (if applicable)
- Communications identification
- Authentication mechanism, if applicable
- Identifications for all company entities
- Addresses of multiple receiving locations (if applicable)
- Daily timing for transmission and receipt of data
- Business message standard version to be implemented
- Date to start testing
- Implementation date.

4.9.12 Identifying Data to be Exchanged

New trading partners should review traded message preference data to ensure mutual agreement and understanding of the data to be exchanged. The published EDI standards define the technical aspects of data which can be exchanged. Certain data is required. Other portions are optional based on the ability of the sending party to create the information. Other parts are conditional based on the technical or business context in which the information is being exchanged.

Different coding schemes used by trading partners should also be exchanged. For example, a buyer must understand a seller's price bracket structure and its impact on the ordering process. A seller must understand ship-to and bill-to information.

4.9.13 Interfacing With Internal Applications

Because internal application systems vary significantly from company to company, specific interface guidelines cannot be given. However, interface or bridge programs must be developed at both ends of an information exchange in order to provide data to an application or to extract data from an application. To develop the requirements for an interface or bridge program, companies must compare the data available in their internal systems with the data defined in the messages to be used. This procedure is generally known as "mapping". The primary step in mapping is to determine if internal systems and data files contain the information required to format a valid message document. If any required data fields are not available, it will be necessary to modify internal application systems to provide that data. Likewise, it may be necessary to build cross-reference facilities in order to translate from internal application codes to those used by EDI application software packages may provide this.

Where physical documents are available, many companies use the printed information, along with their computer files, to help in the mapping process. To keep these files synchronized, trade parties should develop procedures for the continued maintenance of merchandising information either through business messaging or manual processes.

4.9.14 Testing

Once all pre-implementation tasks have been completed, it is necessary to test prior to actual startup or when changing application systems. Testing between trading partners should involve the exchange of test documents to verify content and format, effectiveness of electronic communications links and the return of appropriate acknowledgments.

4.9.15 Software

The time and effort involved in testing will depend on the number of bridge programs required to interface with the translation software, and whether the translation software is developed internally, purchased or leased from a commercial software publisher, or provided by a third-party solution provider. Software that is developed internally must be fully tested using customary testing tools and techniques. For commercially obtained translation software, the software vendor usually provides some support in the installation and testing of the software, but specific testing with the interface or bridge software is an internal responsibility. For situations in which an external entity provides translation services, internal staff must work with this entity to validate the accuracy of translation to or from internal formats.

4.9.16 Communications

If a VAN or electronic exchange hub is used, there are certain test procedures to follow to ensure accurate and complete transmission, and to validate pickup and delivery procedures and timing. The service providers work directly with their clients to plan, schedule, and perform the required testing. If a VAN or an exchange hub is used, transmission of messaging documents should be monitored on a regular basis to verify the effectiveness and timeliness of the provider and any interconnects with any other providers. If timeliness of end-to-end delivery of documents is important, companies may want to negotiate service level agreements with their VAN or exchange. For example, a company may require documents sent to their hub be delivered to a trading partner's mailbox within a specified time, regardless of which hub that trading partner is using. Priority routing may be necessary for time critical documents by document type or trading partners. Where interconnects exist, the relationship between VANs and/or exchanges should be evaluated.

4.9.17 System Test with Partner

A complete system test with a company's initial trading partner verifies the completeness and accuracy of the exchange of data. It determines compliance with any unique conditions that have been mutually agreed upon by the partners.

From a technical standpoint, the purpose of the complete system test is to verify the following capabilities:

- The ability to send and receive messages to and from the trading partner
- The translation of documents to and from EDI and business message formats
- The ability to process the output from the translation process
- The generation of the acknowledgment

Some companies have found it useful to meet with their initial trading partner prior to system testing. Such meetings typically include representatives from merchandising/sales, accounting, customer service, data processing and other functions involved in the project effort. This meeting can assure that all aspects of the test are covered. Other companies have found it sufficient to plan the testing by telephone, rather than with an actual meeting. After initial implementation and when expanding to additional trading partners, many companies adopt this less formal approach.

4.9.18 Initial Implementation and Start-Up

Once all testing procedures and internal personnel orientation have been completed, actual startup can take place. Initial implementation almost always involves parallel processing. This means that paper documents, facsimiles or other manual methods of information exchange are used as a backup to the EDI or business message transmissions, which function as the actual business transactions. When companies are satisfied with both the timing and the accuracy of the electronically delivered data, and when the personnel involved are comfortable working in a paperless environment, implementation can proceed to true production status. This implies that manual methods of information exchange are no longer used and that full reliance is placed on the electronic exchanges. The transition time from a parallel mode to a production mode varies widely, ranging from

a matter of a few days to several months. The timing typically depends on the quality and completeness of the pre-implementation effort, and the extent to which product files have been synchronized prior to beginning parallel operation.

While the length of time required to achieve production status may vary from user to user, it is important to establish a specific target date to “go live” with new trading partners. Lack of such a timetable can result in a lengthy period of parallel processing which delays the realization of benefits and hurts the credibility of a company’s electronic messaging program.

4.10 Post Implementation Considerations

Once initial implementation has been successfully achieved, there are three major ongoing considerations:

- Expanding electronic messaging usage to additional trading partners
- Enlarging messaging processing by implementing additional messages
- Keeping systems current with changes in the standard and with its use in the industry.

The deciding issue is what makes the most business sense for the company.

4.10.1 Expansion to Additional Partners

The speed at which expansion to additional partners can be achieved depends on how well internal systems have been set up to handle trading partner requirements. If few or no system changes are required to add a new trading partner, startup can occur quickly. If major system changes are required to add a new partner, startup will take much longer. When surveying trading partner requirements and capabilities in the early stages of the project, the electronic messaging development team needs to examine processing variations. As much as possible, initial procedures should be established which can subsequently accommodate different business relationships. While the EDI standards allow companies to communicate data, it does not standardize internal operations and applications, nor does it standardize specific business relationships between companies.

Since many companies survey current trading partners as part of their implementation plan, expansion to additional partners flows from their initial plan. In order to select trading partners purposefully, this initial plan should factor in high volume trading partners which would allow the company to achieve break-even with the fewest number of partners. It should also select as potential partners companies that have an established track record in electronic data trading to enable a smooth transition. Documentation is available through the GS1 US, which may prove useful in identifying potential trading partners. EDI User Group meetings and seminars sponsored by the GS1 US, as well as other industry forums, also may be used to network with potential trading partners.

4.10.2 Expansion to Additional Message Documents

When companies first implement electronic messaging, they typically spend a period of time expanding processing to new trading partners, gaining significant experience in the process. At some point, however, companies expand to additional information exchanges to reap benefits in other business practices.

Expansion to new message documents requires many of the same steps as an initial implementation. However, since a partner base and the messaging infrastructure already exist, the process is somewhat simplified.

Companies should consider the following, whether expanding message capability or adding partners to existing messages:

- Review industry publications to see who is working in what initiatives
- Annual Activity Report regularly to see who is doing what.
- Review a list of current and potential trading partners and periodically contact them to find out what they are currently doing.
- Attend user group meetings and seminars.
- Survey existing and potential trading partners to find out which messages they can use. (Surveys should be conducted regularly since trading partners' capabilities are constantly changing).

4.10.3 Keeping Current with Standards

EDI messaging systems are not classic data processing systems that become relatively stable once they have been fully integrated and tuned. Rather, these systems continue to change and evolve as new trading partners are added, as internal systems that interface with messaging functionality change, and as the standards themselves change. In other words, the electronic messaging environment is dynamic. The nature of electronic messaging requires ongoing involvement by most of the initial project team. Some key areas for companies to consider are the following:

- Changes to the Standards
  The GS1 US X12 Requirements Group (XRG) has responsibility for maintaining EDI standards as a useful and viable business tool, as well as keeping the standards responsive to technological and business changes. In that role, it is the clearinghouse of all additions and changes to the published message and communication standards. Companies can submit standard change requests for consideration. Such requests usually are made when trading partners encounter a business need that is not handled by the existing standard. Standard changes can range from simple code changes or additions to the creation of new messages.

- Moving to New Versions of the Standard
  New versions of the standards are published regularly for timely implementation by trading partners. These new versions contain the continually evolving standards which are necessary to provide enhanced functionality or address specific business needs. At the implementation date, participants are generally expected to be able to receive both the old and the new versions by their trading partner base. By convention, the old version of the standard is dropped after an established period of time, once the new standard becomes effective. This allows companies a transition period to become fully operational with the new standard. Exchanges of versions of the standard outside this convention are considered proprietary. It is vital to the continuing viability of electronic messaging that all companies comply with this version implementation timing convention.

- Existing Partner Communications
  Implementation of electronic messaging with a trading partner does not eliminate the need for continuing contact. It is important to monitor each partner's plans and status relative to version change timing in order to avoid confusion and errors when a new version is implemented. In addition, if new version changes materially affect the current exchange of data, it is important to initiate partner-to-partner communications and technical systems planning as early as possible.
  Ongoing contact with trading partners should also include inquiry into the implementation of new message documents, to assist in planning a strategy for new information exchanges.

- GS1 US Sponsored Meetings
  Within the GS1 system, these organizations regularly sponsor User Group meetings in various formats. These meetings are useful to develop and maintain personal contacts with trading partners. In addition, these meetings keep companies abreast of the current status of the standards and their future direction. User Group meetings also provide a forum for companies to provide input regarding Global Standards Management Process policies and procedures. In addition, they sponsor a number of orientation seminars and implementers workshops. The GS1 US website contains an ongoing calendar of GS1 US sponsored events and trainings. Contact the GS1 US for a schedule of events.

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5 The GS1 US X12 Requirements Group

This chapter outlines the process flow and narrative for the X12 Requirements Group (XRG), which maintains the UCS, I/C and VICS EDI standards, ensuring they are consistent with ANSI X12 EDI guidelines.

5.1 Process Deliverables

The XRG provides the following:

- A fully documented standards management process validated by all stakeholders
- Defined management responsibility and accountability for standards content
- "One face" presented by all North American mass merchandising retail, drug and grocery industry stakeholders.

5.2 Process Scope

The XRG, in conjunction with the GS1 US, ensures one single process that allows for a uniform approach and methodology for North American EDI standards management. The scope for this process includes standards development (including business requirements validation), standards maintenance and implementation support to customers, users and members.

The overall advantage of the process is that it embraces the existing workflow of the overall global standards management, from the initial identification by a user/submitter of a need or requirement (in the form of a Change Request) through to the formal release of the standard developed to meet that requirement.

The process allows for assessment and validation of standards development and the Change Request during all stages of the workflow, with a high level of user and customer involvement through membership in GS1 US or other industry groups (e.g. GMA, NACS, VICS, etc.). All steps are totally visible, with valid measurement criteria and regular reports made available. This results in a common and consistent approach to projects across the organization thereby assisting resource management and priority setting. It provides a structured approach to ensure that all the relevant information is gathered at the earliest opportunity for sound decision making. It ensures a clear process supported by guidelines to help people start a project, ensure smooth progress through implementation, and deliver benefits to the GS1 US members and customers.

5.3 Tracking Change Requests

North American EDI change requests are tracked through the GS1 GSMP Change Request system. An administration function is in place and supports an automated GS1 Change Request Management System.

5.4 Guiding Principles

The XRG was developed with a number of guiding principles in mind.

First, the XRG is customer driven. The process is customer focused and involves the participation of GS1 US members at all phases.

Second, the XRG is transparent at all stages. Once any change request enters the process, it is possible for the user/submitter or any other interested party to track and trace the request's progress through each stage.

Third, the XRG uses a single standards repository, avoiding any divergences and misinterpretations of the standards.

Fourth, the XRG presents “one face” to the North American EDI user, a critical element on the path to global standards management.

Fifth, the XRG is efficient. It is designed to be a “single-pass” process, with clearly defined series of roles and responsibilities to ensure this efficiency.

Finally, the XRG has implemented a single, common approach to North American VICS EDI, UCS and I/C standards management. All three standards are triggered by submission of a single document (Change Request) from a customer. This common approach enables the XRG to process any request, be it a modification to an existing standard or creation of a completely new standard.

5.5 Company Participation

Member participation is vital to the success of the XRG. Business process users and EDI subject matter experts are all needed to complement the work done by the XRG.

Further information about participating in the North American X12 Requirements Group can be obtained by contact GS1 US or visiting its web site (www.gs1us.org).

6 Business Process Enablement

There have been significant enhancements to EDI transaction sets since 2001, as globalization and the impact of the Internet have cascaded throughout the business world.

6.1 Traceability

GS1 Identification Keys are a powerful tool for enabling and supporting product traceability through the supply chain.

- The Global Trade Item Number (GTIN), coupled with the product's information, provides unique identification about the trade item. A serialized GTIN may be used in a GS1 barcode or with Electronic Product Code/Radio Frequency Identification (EPC/RFID), thereby enabling individual trade items to be identified at different points in the supply chain.
- The Global Location Number (GLN) provides unique identification of a party or location relevant to a trading partner's supply chain.
- The Serial Shipping Container Code (SSCC) provides unique tracking of logistics units as they move from carrier to carrier to their final destination.

6.2 US Government Import Security Filing 10+2

US Customs & Border Protection has implemented a number of new programs and requirements over the last few years in order to promote enhanced border security and ensure better information over products that are being imported into the United States.

In support of the import security filing, enhancements have been implemented to the following transaction sets to support improved information between the buyer and seller regarding product sourcing and inbound container information:

- 850 Purchase Order
- 855 Purchase Order Acknowledgment
- 860 Purchase Order Change – Buyer Initiated
- 865 Purchase Order Change – Seller Initiated
- 856 Ship Notice/Manifest

6.3 Legislative Requirements

Various governmental levels and agencies have implemented enhanced reporting requirements to comply with legislative requirements. Recent enhancements to the EDI guidelines include:

- Enhancements in support of California Air Resources Board (810)
- Enhancements in support of Carpet Stewardship (810)
- Enhancements in support of USDA Country of Origin Labeling (810, 856)
- Enhancements in support of identifying organic products (810)
- Enhancements in support of Consumer Product Safety Commission (863)
- Enhancements in support of USDA Perishable Agricultural Commodities Act (810, 894)
- Enhancements in support of recycling (894, 895)
- New codes (data element 235) to support improved reporting for Country of Origin (matches Global Data Synchronization Network)
- New codes (data element 157) to support improved status reporting for inbound containers in the 315 Status Details (Ocean) transaction set

6.4 Other Enhancements

X12 EDI documents are constantly changing to support new or revised business processes. Other enhancements that have been implemented include:

- 753 Routing Request was modified to reflect shipment weight and product classification needs
- 754 Routing Instructions was modified to support product imports
- 820 Payment/Remittance Advice was modified to include new international ACH and international Fedwire payment options
- 890 Contact & Rebate Management transaction set was added to support the Foodservice industry
- In support of EPC/RFID technology, changes were implemented to the 856 Ship Notice/Manifest transaction set
- 892 Trading Partner Performance Measurement allows trading partners to provide rating information on 17 performance measurements
- In support of GRAI and GIAI GS1 asset identifiers, new codes were added to data element 88, for use in the 856 Ship Notice/Manifest transaction set
- In support of nutrition and product ingredient information, new codes have been added to the PID02 and PID04 segments for use in the 832 Price/Sales Catalog transaction set
- For GS1 Canada, a suite of transaction sets has been adopted for use in Healthcare
- For GS1 Canada, a suite of transaction sets has been adopted for use in Foodservice
- In support of identifying product markings (barcode or EPC/RFID tagging), new codes have been added to PID04

7 Appendices

7.1 Appendix A - List of Supporting e-Business Documents

Refer to the documents listed with the annual GS1 US X12 EDI version publication.

7.2 Appendix B – Glossary of Terms

-A-	
ANSI	American National Standards Institute. The accrediting body for ASC X12 EDI.
-B-	
B2B (business-to-business)	Business that sells products or provides services to other businesses.
B2C (business-to-consumer)	Business that sells products or provides services to end-user consumers.
Business Requirements Group (BRG)	An GS1 Global Standards Management Process group whose members have an in-depth knowledge of business processes within a specific function and working knowledge of the technology enablers. Group members are individuals who support the standards and who are involved in the application of the standards in their organizations.
-C-	
Collaborative Planning, Forecasting and Replenishment (CPFR)	Collaborative relationships between buyers and sellers facilitated through co-managed processes and shared information. By integrating demand and supply side processes, CPFR improves efficiencies, increases sales, reduces fixed assets and working capital, and reduces inventory for the entire supply chain while satisfying consumer needs.
-D-	
Direct Store Delivery (DSD)	A method of delivering product from a supplier directly to the retail store, bypassing warehouses. Shelf inventory is typically managed by the brand owner or distributor, with product check-in done by both the brand owner/distributor and retailer. Major DSD categories include greeting cards, beverages, baked goods and snack items.
Document Type Definition (DTD)	A schema that defines the structure of an XML document.
DUNS Number	A non-indicative 9-character number assigned and maintained by Dun & Bradstreet to identify unique business establishments.
-E-	
EANCOM	The international EDI standards provided by GS1, conforming to the UN/EDIFACT standards. It is a subset of the EDIFACT standard.
EAN International	See GS1.
GTIN-14	The GS1 system identification number that is used to identify trade items. Now known as the Global Trade Item Number (GTIN).

Electronic Commerce	The conduct of business communications and management through electronic methods, such as electronic data interchange and automated data collection systems.
Electronic Commerce Council	Non-for-profit voluntary standards organization of Canada (ECCC) that works with multiple industry sectors to enhance the efficiency and effectiveness of their respective supply chains. Now known as GS1 Canada.
Electronic Data Interchange (EDI)	The process of exchanging business data from one computer to another computer using a public standard format.

-F-

Fast Moving Consumer Goods (FMCG)	Products that are sold at a rapid pace in a retail environment.
File Transfer Protocol (FTP)	On a network, FTP is a set of net systems and user interfaces that facilitate the transfer of files to users from servers.

-G-

Global Commerce Initiative (GCI)	An organization created from major global suppliers and retailers, with a focus on improving the efficiency of the global supply chain. Their mission is to bridge the gap between the world's foremost supply chain standards to meet the needs and expectations of consumers around the world. The GCI aims to promote global supply chain efficiency, effectiveness, and consumer value through cooperation between manufacturers and retailers operating at a global level.
Global Data Dictionary (GDD)	A common list of terms and items, which are common across a specific industry, as administered by GS1.
Global Location Number (GLN)	A unique number that is assigned to a location that enables that location to be identified unambiguously worldwide. The GLN can be used to identify anything that is, or can be, addressed, and includes legal, physical and functional locations.
Global Standards Management Process (GSMP)	Process for developing and maintaining global electronic commerce standards and guidelines as provided by GS1.
Global Trade Item Number (GTIN)	The naming convention for the superset of all Trade Item Identification data structures. A trade item is defined as a product or service. The four data structures encompassed by GTIN include the GTIN-12, GTIN-8, GTIN-13 and GTIN-14.
GS1	User-driven numbering organization based in Brussels, which manages a system of identification and communication for products and services based on internationally accepted and business led standards. Previously known as EAN International.
GS1 US	US based not-for-profit standards organization which co-manages the GS1 identification system. A member organization of GS1. Formerly known as the Uniform Code Council, Inc.

-H-

Hypertext Markup Language (HTML)	A document format used on the World Wide Web. Based on SGML, "Tags" are embedded in the text. A tag consists of a "<", a "directive" (case insensitive), zero or more parameters and a ">". Matched pairs of directives, like "<TITLE>" and "</TITLE>" are used to delimit text which is to appear in a special place or style.
-I-	
I/C (Industrial/Commercial)	North American EDI implementation standard used by the industrial / commercial industry.
Internet Service Provider (ISP)	A company which provides other companies or individuals with access to, or presence on, the Internet. Most ISPs are also Internet Access Providers; extra services include help with design, creation and administration of World-Wide Web sites, training, and administration of intranets.
Item	A product or service upon which there is a need to retrieve pre-defined information and that may be priced, ordered or invoiced at any point in the supply chain.
-J-	
-K-	
-L-	
Local Area Network (LAN)	A data communications network, which is geographically limited (typically to a 1 km radius) allowing easy interconnection of terminals, microprocessors and computers within adjacent buildings.
-M-	
Master Data	A set of data, which describes the specifications and structures of each Item and Location involved in supply chain processes. Basically refers to the Global Trade Item Number (GTIN) for products and the Global Location Number (GLN) for Party, and includes additional details about the product or location.
-N-	
-O-	
-P-	
Parser	A computer program that breaks down text into recognized strings of characters for further analysis.
Party	Any legal, functional or physical entity involved at any point in any supply chain and upon which there is a need to retrieve pre-defined information.
Point-of-Sale (POS) Data	Item specific product information summarized from data collected at the point of purchase by the consumer. Electronic scanning generally collects this information.

-Q-

-R-

-S-

SSCC	Serial Shipping Container Code. A unique identifier, based on the GS1 System that identifies a logistics unit.
Simpl-eb	A Global Commerce Initiative (GCI) that applies a set of e-business standards to the Order-to-Pay process, using common definitions of parties, data, and processes.
Simple Mail Transfer Protocol (SMTP)	A protocol used to transfer electronic mail between computers, usually over Ethernet. It is a server-to-server protocol, so other protocols are used to access the messages. The SMTP dialog usually happens in the background under the control of the message transport system.
Standard Generalized Markup Language (SGML)	A markup language used to define the structure of documents in an electronic form.

-T-

-U-

UN/EDIFACT	United Nations Electronic Data Interchange for Administration, Commerce and transport.
UCC/Uniform Code Council	Non-profit association, which administers the Universal Product Code (UPC), and electronic commerce implementation guidelines. Now known as GS1 US.
Unified Modeling Language (UML)	A non-proprietary, third generation modeling language. The Unified Modeling Language is an open method used to specify, visualize, construct and document the artifacts of an object-oriented software-intensive system under development. The UML represents a compilation of "best engineering practices" which have proven successful in modeling large, complex systems
Universal Communication Standard (UCS)	North American EDI implementation standard primarily used by the food and beverage industry.
Universal Product Code (U.P.C.)	A bar code symbol representing a unique product identification number, applied at the product level to identify products where attributes such as product description, size and weight are fixed. Used to mark items that will be scanned at Point-of–Sale.

-V-

Value-Added-Network (VAN)	A service provider that provides a communication link between companies to enable electronic exchange of business data/documents.

Vendor Managed Inventory (VMI)	A business process where the supplier of a product manages the inventory of the product in a distributor's warehouse and replenishes the inventory based on consumption.
Voluntary Interindustry Commerce Solution (VICS EDI)	A subset of the ANSI X12 EDI standards, maintained and utilized by the general merchandise retail industry in North America.

-W-

-X-

X12 EDI	The ANSI ASC X12 committee that is responsible for the development and maintenance of standards for Electronic Data Interchange (EDI) within North America
eXtensible Markup Language (XML)	A universal language for data on the internet that allows content to be delivered from a wide variety of applications to the desktop or to a processing application.

-Y-

-Z-

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