

# ELECTRONICS INDUSTRY DATA EXCHANGE (EIDX)

## Forecast/Planning Business Models

### IMPORTANT NOTE

Pre-1999 business models are undergoing recast into Unified Modeling Language (UML) notation, and some restructuring. In addition, we've been adding cross-references to XML standards, such as RosettaNet. **The Downloadable business model documents have *not* been updated. Always refer to the "[Clickable Business Models](#)" for the latest and greatest information.** That area of the website also contains very useful information on newer, internet-based technologies. The changes to the existing models *have not changed the original intent* of the models published here in this table, but are (we hope) improvements to presentation that enhance understanding of the business processes and how to implement them.

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**EIDX Forecast/Planning Business Models**

**Revision History**

<b>Date</b>	<b>Description</b>
July 1997	As Issued (balloted and approved 11/96)

# EIDX Forecast/Planning Business Models

## Table Of Contents

<b>Purpose</b>	<b>1</b>
Additional References:	1
Standards Version	1
Abbreviations Used	1
<b>Definitions</b>	<b>3</b>
Forecast	3
Blanket Purchase Order	3
Release	3
<b>Scope</b>	<b>4</b>
<b>Benefits</b>	<b>5</b>
<b>Considerations</b>	<b>6</b>
<b>Transactions/Messages Used for Order Processes</b>	<b>7</b>
Forecast Data Requirements	7
Order Transaction/Messages	7
<b>Forecast/Planning Model 1 – Planning Forecast</b>	<b>8</b>
<b>Forecast/Planning Model 2 – Material Release (Classic)</b>	<b>10</b>
<b>Forecast/Planning Model 3 – Embedded Release</b>	<b>12</b>
<b>Forecast/Planning Model 4 – Forecast-Based SMI</b>	<b>14</b>
<b>Forecast/Planning Model 5 – Contract Manufacturing – PC Buys Components</b>	<b>16</b>
<b>Forecast/Planning Model 6 – Contract Manufacturing – CM Buys Components</b>	<b>18</b>
<b>Forecast/Planning Model 7 – Distributor Forecasting</b>	<b>20</b>
<b>Forecast/Planning Model 8 – SMI – Third-Party Warehouse</b>	<b>22</b>
<b>Issues Log</b>	<b>24</b>
<b>Summary</b>	<b>25</b>

# EIDX Forecast/Planning Business Models

## Purpose

The purpose of this document is to model the flow of documents and information used in forecast/planning business processes.

Any implementation method should be agreed upon by trading partners. It is the intent of this document to make interpretation of the models used for orders more consistent, so that implementations are based upon common practices.

### ADDITIONAL REFERENCES:

- *EIDX Business Models: Order Models* (July 1997).
- *Implementation Recommendations for Blanket Purchase Order Transactions* (November 1996).
- *Implementation Recommendations for Transactions Used in Forecast/Planning Models* (March 1997)

### STANDARDS VERSION

Any reference to transactions, messages, data segment or element positions referred to in this document are particular to ASC X12 Version 003020 or EDIFACT 92.1. Users of this document may need to adapt information when applying these recommendations to other standards versions.

### TERMINOLOGY

The transaction used for transmitting forecast in ASC X12 is called "*Planning Schedule with Release*" and the message in UN-EDIFACT is called "*Delivery Schedule*". Releases may be embedded in the Planning Schedule or Delivery Schedule file, or sent in separately as discrete releases. The transaction used for discrete releases in ASC X12 is called a "*Shipping Schedule*" and the message in UN-EDIFACT is called "*Delivery Just-In-Time*." This document will use what is agreed upon as generic terminology. For the remainder of this document, planning schedules and forecasted delivery schedules will be referred to as "*forecasts*," and releases, whether imbedded in the forecast transaction or sent separately, will be referred to as "*releases*."

### ABBREVIATIONS USED

ANSI	American National Standards Institute
ASC X12	Accredited Standards Committee X12 (ANSI)
BPO	Blanket Purchase Order
CM	Contract Manufacturer
CS	Component Supplier
EDI	Electronic Data Interchange
PC	Prime Contractor (End-Customer, OEM)
PO	Discrete (Standalone) Purchase Order
TCA	Terms and Conditions Agreement
SMI	Supplier-Managed Inventory

**EIDX Forecast/Planning Business Models**

UN- EDIFACT	United Nations - EDI for Administration, Commerce and Trade
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### Definitions

#### **FORECAST**

A forecast is an estimate of future demand. Generally, trading partners establish agreements regarding “frozen” zones, whereby it is agreed that demand will be frozen and not change; usually the frozen zone is established to be at lead time. Lead time may be negotiated to be anything from true manufacturing lead time to ordering lead time. In the processes described in this document, it is assumed that agreements are made for sellers to plan to forecast, and the agreements include clauses about liability on the buyer’s part for raw materials, labor, overhead, and schedule flexibility (upside or downside in demand). In this way, order lead time can be set to a minimal value, allowing releases against the forecast to be made virtually at zero lead time or “just-in-time.”

#### **BLANKET PURCHASE ORDER**

A Blanket Purchase Order (BPO) is a long-term commitment to a vendor for material against which short-term releases will be generated to satisfy requirements. The BPO defines specific terms, conditions, and pricing terms not already contained in or more specific than terms in the contractual agreement. The general recommendation is that a BPO is issued for a single item, however, trading partners may agree to process multiple item BPOs. A blanket order may specify a firm or estimated total quantity with no delivery schedules specified; in this case, releases are issued later either by way of a material release planning schedule or by way of discrete releases. Alternatively, a blanket order may specify a total quantity and predetermined delivery schedules; in this case, blanket change orders are used to make adjustments to the delivery schedules. Instead of specifying any quantity (firm or estimated), a blanket order may specify a total number of dollars to be purchased. Finally, a blanket order might be issued as a vehicle to ship against, where the TCA calls out that quantity commitments are forecast-based.

#### **RELEASE**

The authorization to produce or ship material which has already been ordered.

## EIDX Forecast/Planning Business Models

### Scope

This document will address the following business models:

<b>Order Model</b>	<b>Description</b>
1	Planning Forecast
2	Material Release (Classic)
3	Embedded Release
4	Forecast-Based SMI (Supplier-Managed Inventory
5	Contract Manufacturing - PC (Prime Contractor) Supplies Components
6	Contract Manufacturing - CM Supplies Components
7	Distributor Forecasting
8	SMI – Third Party Warehouse

## **EIDX Forecast/Planning Business Models**

### **Benefits**

Forecast processes are initiated for business reasons decided between trading partners. EIDX will recommend guidelines for business models and transactions/messages to be used in support of forecast processes to clarify processes for implementing EDI forecasting programs, resulting in decreased implementation cycle time



## EIDX Forecast/Planning Business Models

### Considerations

See *Implementation Recommendations for Transactions Used in Forecast/Planning Models* (March 1997).

## EIDX Forecast/Planning Business Models

### Transactions/Messages Used for Order Processes

Transactions and Messages recommended in the business models addressed in this document are based on a high-level evaluation transactions and messages available in ASC X12 and EDIFACT that are already being used for forecast/planning processes. The recommendations in this document are subject to revision when the EIDX Guidelines and Standards Subcommittee evaluates the transactions/messages in detail.

#### FORECAST DATA REQUIREMENTS

Basic data items used in many forecasting processes:

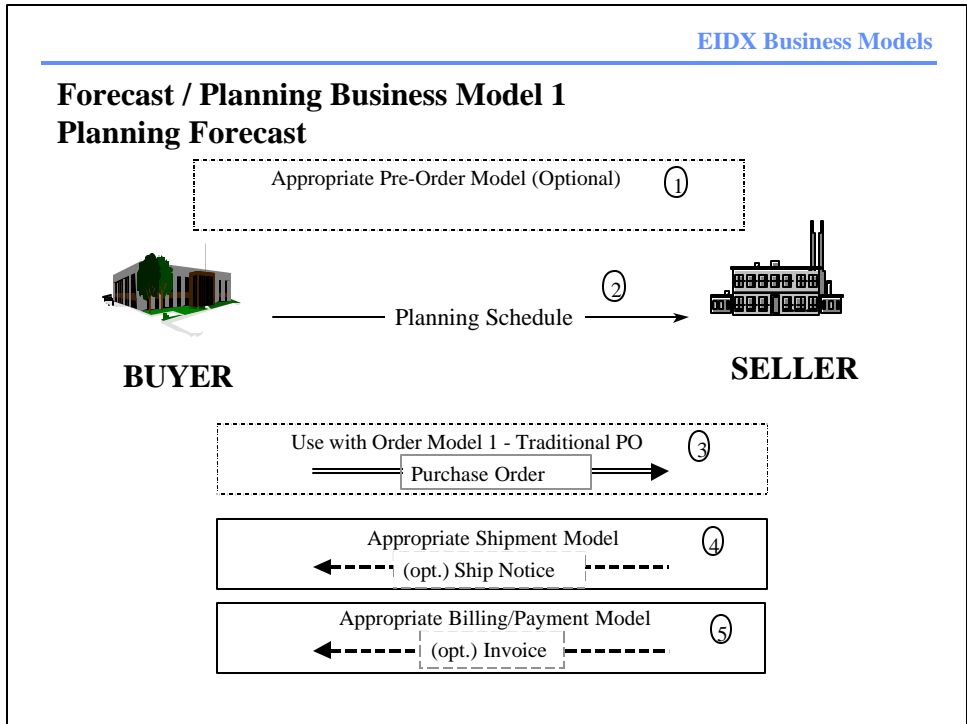
- Quantity to be shipped/delivered
- Date(s) to be shipped/delivered
- Part number or description
- Buying Party information
- Ship-To Location

#### ORDER TRANSACTION/MESSAGES

The following table gives a high-level description of the transactions/messages commonly used for order processes.

X12 Txn	UN Msg	Description
830	DELFOR	Used to convey schedules of planned deliveries.
862	DELJIT	Used to convey precise delivery requirements and Just-In-Time schedule requirements; intended to supplement the 830/DELFOR.
870	OSTRPT (available in D.97A)	Used to convey status of order or forecast, e.g. current planned shipment dates and quantities.
856	DESADV	Used to advise buyer of a shipment.
861	RECADV	Used to advise a seller that the goods have been received by the buyer or buyer's agent.
944	RECADV	Used by warehouse to advise another party (usually the owner of the goods) that goods have been received.
947	INVRPT	Used to report adjustments to inventory quantities.

**Forecast/Planning Model 1 – Planning Forecast**



## EIDX Forecast/Planning Business Models

### Attributes (Summary)

Buyer generates Planning / Delivery Schedule (net rolling forecast) for information only and capacity or lead time planning purposes, to convey anticipated demand or run rates; no authorization to build or ship implied except per trading partner agreement. Purchase Orders used to release firm schedules.

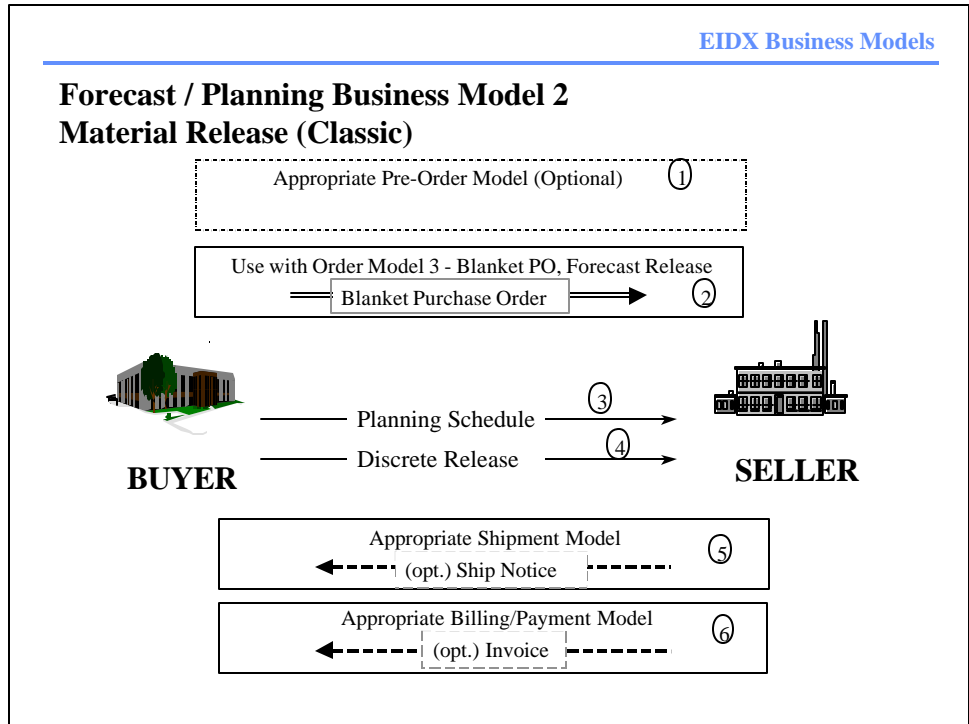
### Attributes (Detail) and Transaction/Message Recommendations

Step	Description	Transaction/Message Recommendation
1.	Buyer may precede order with quoting or contracting cycle.	See Pre-Order Models
2.	Buyer generates and transmits forecast at planned intervals; schedules may have discrete dates or bucketed (weekly, monthly, etc.) quantities.	830/DELFOR
3.	Purchase Orders used to release firm schedules.	Use Order Model 1 – Traditional Standalone PO
4.	Seller ships goods to specified ship-to location.	See Shipment Models.
5.	Billing and Payment cycle initiated.	See Billing Models (in development) and Payment Models.

### Other Usage Recommendations

- Not recommended with Order Models other than Order Model 1 (Traditional Standalone PO).
- For Consignment, use appropriate Inventory Management Model.

**Forecast/Planning Model 2 – Material Release (Classic)**



## EIDX Forecast/Planning Business Models

### Attributes (Summary)

Buyer calculates requirements (net of inventory) and generates blanket PO for stated period (such as yearly). Blanket includes authorization and other terms. Buyer forecasts net requirements and issues weekly or daily, or JIT releases against the Blanket Order. Enables theoretical zero lead-time, zero inventory, and electronic Kanban strategies. Conducive to an environment where releases are more frequent than weekly.

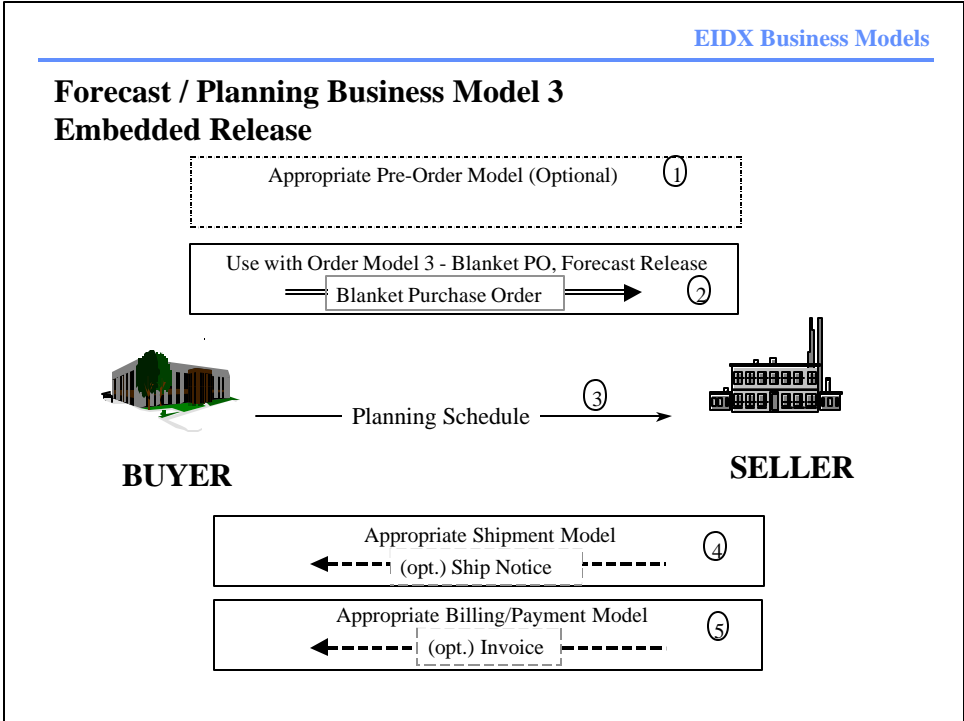
### Attributes (Detail) and Transaction/Message Recommendations

Step	Description	Transaction/Message Recommendation
1.	Buyer may precede order with quoting or contracting cycle.	See Pre-Order Models
2.	Buyer and seller establish blanket purchase order.	Use Order Model 3 – Blanket PO, Forecast Releases
3.	Buyer generates and transmits forecast at planned intervals; schedules may have discrete dates or bucketed (weekly, monthly, etc.) quantities.	830/DELFOR
4.	Releases are issued using Discrete Release (authorization to ship)	862/DELJIT
5.	Seller ships goods to specified ship-to location.	See Shipment Models.
6.	Billing and Payment cycle initiated.	See Billing Models (in development) and Payment Models.

### Other Usage Recommendations

- Not recommended with Order Business Model 1 (Traditional Standalone Purchase Order)
- For Consignment, use appropriate Inventory Management Model.

**Forecast/Planning Model 3 – Embedded Release**



## EIDX Forecast/Planning Business Models

### Attributes (Summary)

Buyer calculates net requirements (net of inventory) and generates blanket PO for stated period (such as yearly). Blanket includes authorization and other terms. Forecast becomes firm release within negotiated lead-time (releases “embedded” within forecast). Used for theoretical zero lead-time and zero inventory strategies. Conducive to an environment where releases are no more frequent than weekly.

### Attributes (Detail) and Transaction/Message Recommendations

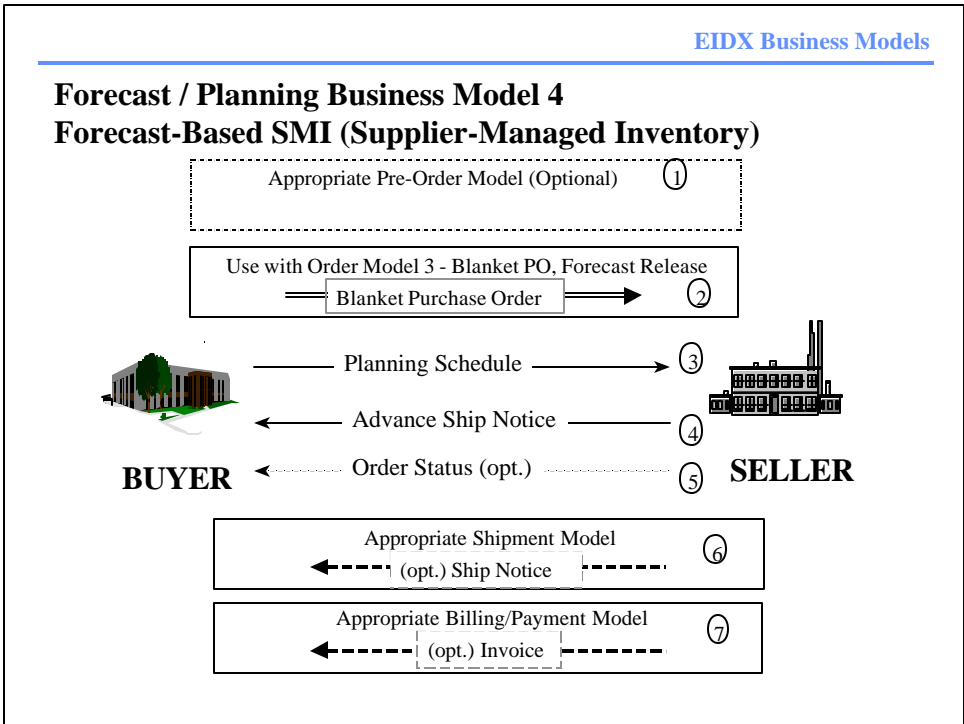
Step	Description	Transaction/Message Recommendation
1.	Buyer may precede order with quoting or contracting cycle.	See Pre-Order Models
2.	Buyer and seller establish blanket purchase order.	Use Order Model 3 – Blanket PO, Forecast Releases
3.	Buyer generates and transmits net rolling forecast at planned intervals; firm requirements explicitly marked (preferred way); alternatively, forecast schedules within negotiated lead time are considered “firm” or “released”.	830/DELFOR
4.	Seller ships goods to specified ship-to location.	See Shipment Models.
5.	Billing and Payment cycle initiated.	See Billing Models (in development) and Payment Models.

### Other Usage Recommendations

- Not recommended with Order Business Model 1 (Traditional Standalone Purchase Order)
- For Consignment, use appropriate Inventory Management Model.



**Forecast/Planning Model 4 – Forecast-Based SMI**



## EIDX Forecast/Planning Business Models

### Attributes (Summary)

Buyer sends planning schedule containing gross requirements (planned consumption), inventory levels, and min/max inventory targets. Seller nets forecast data to determine ship requirements based on buyer's inventory levels and min/max targets. Receipt data sent by buyer so seller can calculate in-transit quantities (embedded Receipt Advice). Optional order status used to convey planned shipments so buyer can anticipate Receiving workload.

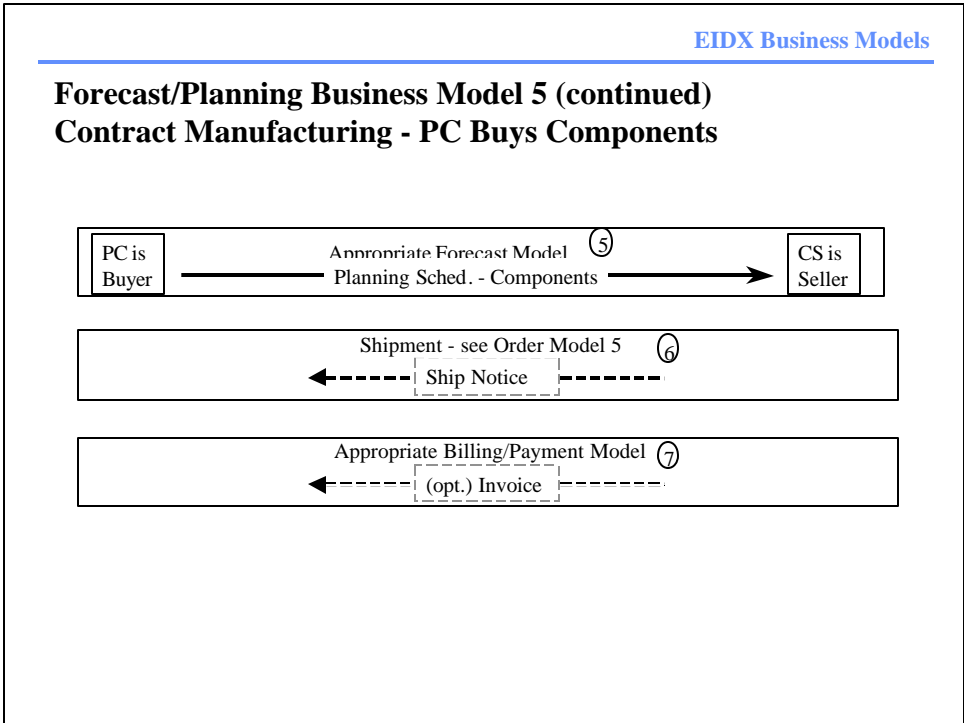
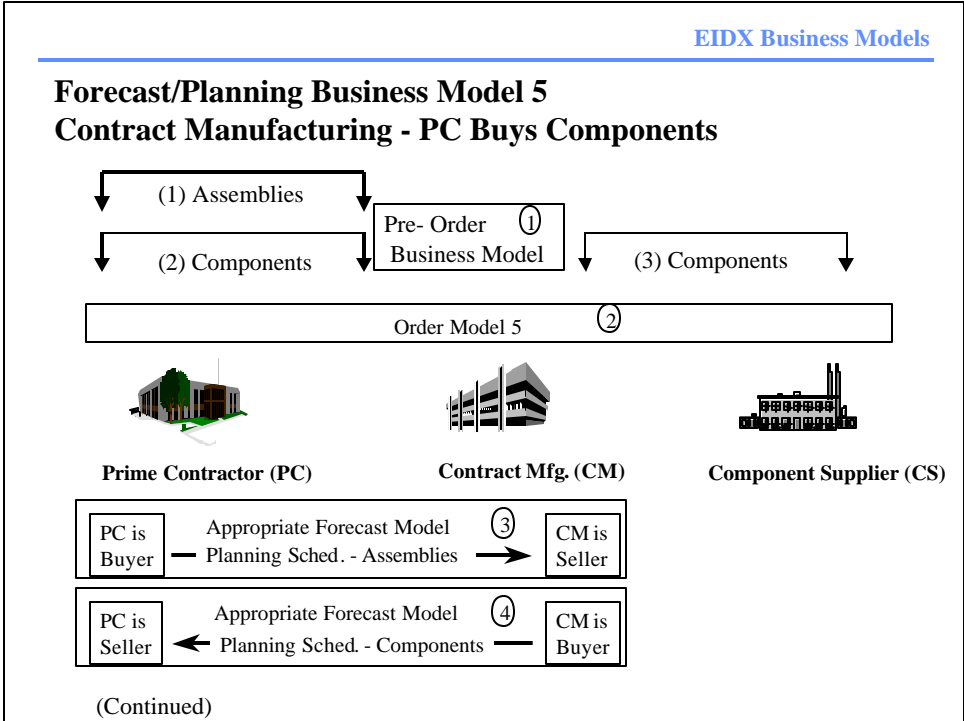
### Attributes (Detail) and Transaction/Message Recommendations

Step	Description	Transaction/Message Recommendation
1.	Buyer may precede order with quoting or contracting cycle.	See Pre-Order Models
2.	Buyer and seller establish blanket purchase order.	Use Order Model 3 – Blanket PO, Forecast Releases
3.	Buyer generates planning schedule with gross requirements, inventory levels, receipt data and minimum and maximum inventory level targets; seller nets forecast data to determine ship requirements	830/DELFOR
4.	Seller may need to send ship notice data so buyer can open a receivable and can send identifiers back with the receipt data (embedded Receipt Advice in planning schedule).	856/DESADV
5.	Order status may be used to allow buyer's Receiving department to plan workload.	870/OSTRPT (OSTRPT available in D.97A)
5a.	Alternative: Inventory Management process may be used.	See Inventory Management Models.
6.	Seller ships goods to specified ship-to location.	See Shipment Models.
7.	Billing and Payment cycle initiated.	See Billing Models (in development) and Payment Models.

### Other Usage Recommendations

- Not recommended with Order Business Model 1 (Traditional Standalone Purchase Order)
- Not recommended for use with consignment, but if consignment process is to be implemented, use appropriate Inventory Management Model.

**Forecast/Planning Model 5 – Contract Manufacturing – PC Buys Components**



## EIDX Forecast/Planning Business Models

### Attributes (Summary)

Prime contractor (Buyer) forecasts assemblies to contract manufacturer. CM orders components from the prime contractor (PC); PC procures the components from Component Supplier (CS) for drop-ship to CM.

NOTE: If PC manufactures the components, use appropriate order models and forecast/planning models; CM in this case is the buyer, PC is the seller; there may be differences in transaction contents from traditional buyer to seller transactions.

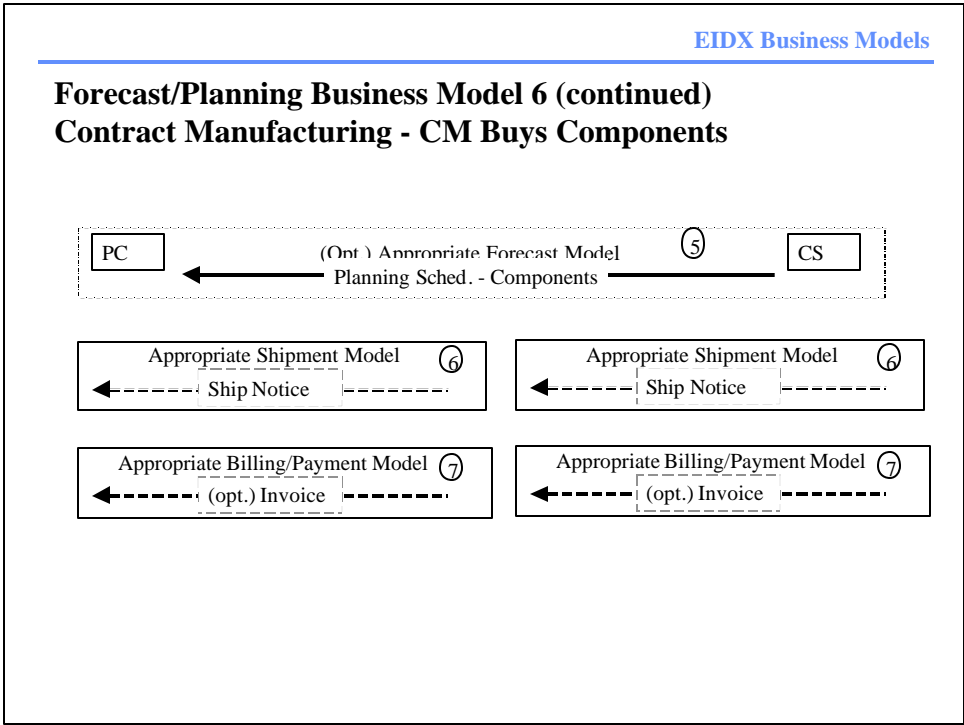
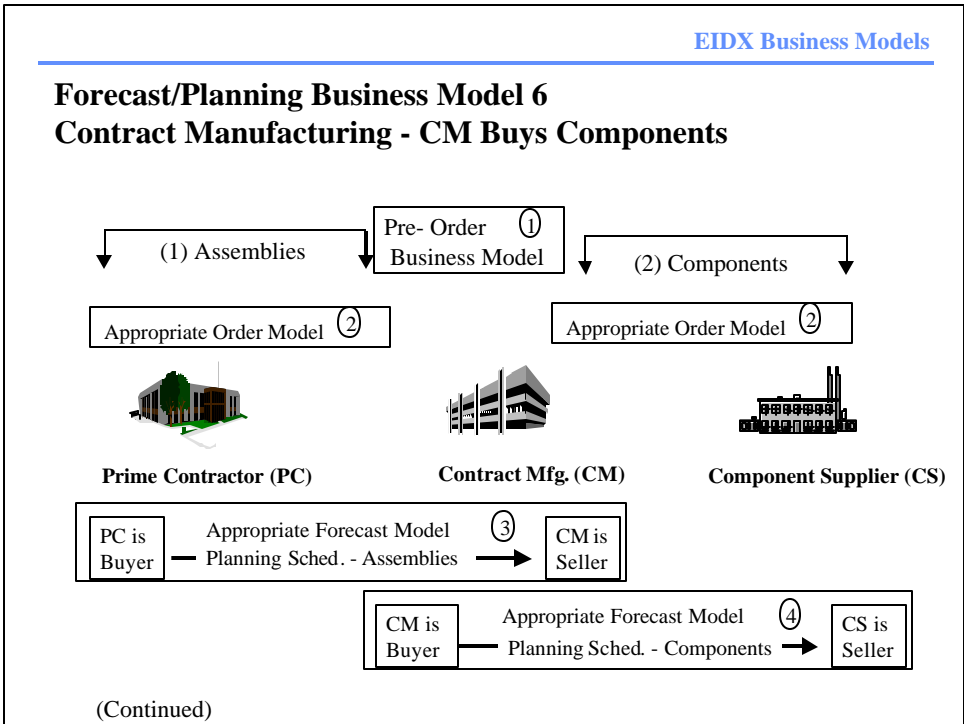
### Attributes (Detail) and Transaction/Message Recommendations

Step	Description	Transaction/Message Recommendation
1.	Parties may precede orders with quoting or contracting cycles.	See Pre-Order Models
2.	PC orders assembly from CM; CM orders components from PC; PC orders components from CS for drop-ship to CM.	Order Model 5: Contract Manufacturing – PC Buys Components.
3.	Prime Contractor (PC, buyer) generates forecast for assembly to contract manufacturer.	Forecast/Planning Model 1 – Planning Forecast recommended; PC is buyer, CM is seller.
4.	Contract Manufacturer (CM) determines component requirements and sends forecast to PC for components being provided by PC.	Forecast/Planning Model 1 – Planning Forecast recommended; CM is buyer, PC is seller.
5.	PC sends forecast for components to component supplier (CM, seller), indicating CM as drop-ship party.	Forecast/Planning Model 1 – Planning Forecast recommended; PC is buyer, CS is seller.
6.	Seller ships goods to CM’s ship-to location and sends Ship Notice to PC.	See Order Model 5.
7.	Billing and Payment cycle initiated.	See Billing Models (in development) and Payment Models.

### Other Usage Recommendations

- Parties may use other Forecast/Planning Models in 2-party mode (PC with CM, PC with CS, CM with CS).
- Not recommended with Supplier-Managed Inventory (SMI), either forecast-based or consumption-based.
- For consignment or Supplier-Managed Inventory, use an order model where parts are shipped to prime contractor, along with appropriate Inventory Management Model (in development); in this case, the PC transfers/resells components to the CM. Alternatively, in an environment where CM buys components from CS, CM and CS can negotiate a consignment or SMI process independently from the PC.

**Forecast/Planning Model 6 – Contract Manufacturing – CM Buys Components**



## EIDX Forecast/Planning Business Models

### Attributes (Summary)

Prime contractor (PC) forecasts assemblies to contract manufacturer (CM); CM forecasts components to Component Supplier (CS). CS may send component forecasts to PC to give PC visibility of aggregate demand for purposes of contracting and assurance of supply.

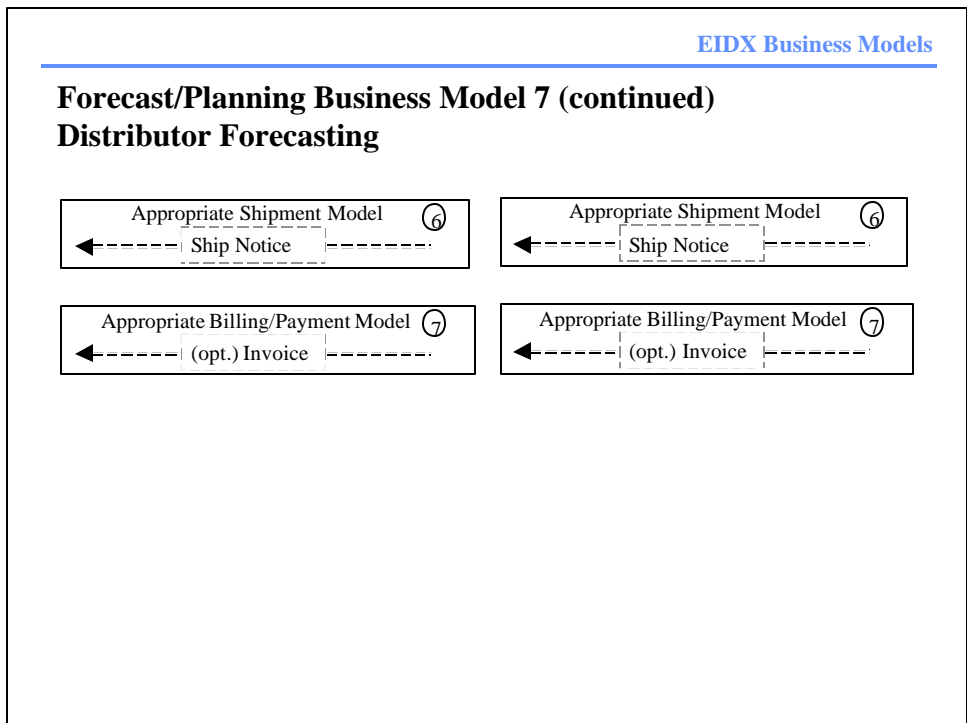
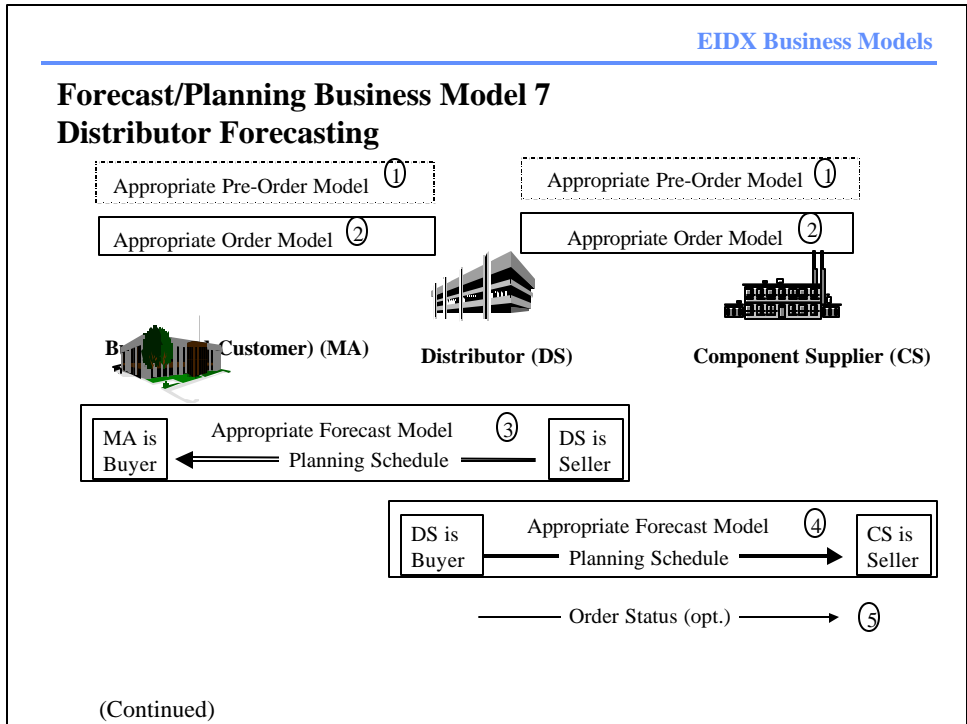
### Attributes (Detail) and Transaction/Message Recommendations

Step	Description	Transaction/Message Recommendation
1.	Parties may precede orders with quoting or contracting cycles.	See Pre-Order Models
2.	PC orders assembly from CM; CM orders components from CS. Parties use appropriate order models in two-party mode (PC with CM and CM with CS).	See Order Business Models
3.	Prime Contractor (PC, buyer) generates forecast for assembly to contract manufacturer using appropriate 2-party Forecast/Planning Model.	Forecast/Planning Model 1, 2, 3 or 4; PC is buyer, CM is seller.
4.	Contract Manufacturer (CM) determines component requirements and sends forecast to CS if components being purchased directly.	Forecast/Planning Model 1, 2, 3 or 4; CM is buyer, CS is seller.
5.	(Optional) CS may send forecast of components being purchased by CM to give PC visibility of demand.	Forecast/Planning Model 1 recommended.
6.	CS ships components to CM's ship-to location and sends Ship Notice. CM ships assemblies to PC and sends Ship Notice. Parties use appropriate shipment models in two-party mode (PC with CM and CM with CS).	See Shipment Models.
7.	Billing and Payment cycle initiated. Parties use appropriate billing models in two-party mode (PC with CM and CM with CS).	See Billing Models (in development) and Payment Models.

### Other Usage Recommendations

- Not recommended with Supplier-Managed Inventory (SMI), either forecast-based or consumption-based.
- For consignment or Supplier-Managed Inventory, use order and forecast models where parts are shipped to prime contractor, along with appropriate Inventory Management Model (in development); in this case, the PC transfers/resells components to the CM. Alternatively, in an environment where CM buys components from CS, CM and CS can negotiate a consignment or SMI process independently from the PC.

**Forecast/Planning Model 7 – Distributor Forecasting**



## EIDX Forecast/Planning Business Models

### Attributes (Summary)

Buyer (End-Customer, a/k/a Party for Whom Item is Ultimately Intended (MA)) sends forecasts to distributor, which may or may not be component supplier-specific. Distributor in turn forecasts demand to component supplier which may or may not be customer-specific. Optional Order Status sent from distributor to component supplier is broken down by end-customer (buyer).

### Attributes (Detail) and Transaction/Message Recommendations

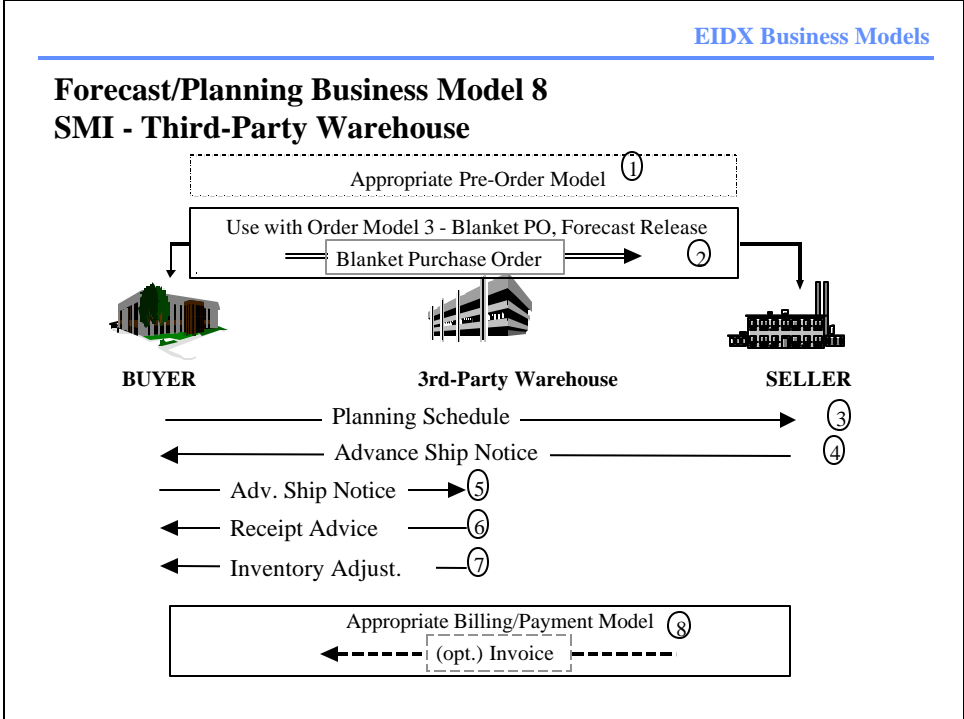
Step	Description	Transaction/Message Recommendation
1.	Parties may precede orders with quoting or contracting cycles.	See Pre-Order Models
2.	Buyer (MA) orders from distributor (DS); DS orders from component supplier (CS). Parties use appropriate order models in two-party mode (MA with DS and DS with CS).	See Order Business Models
3.	MA sends planning schedule to distributor using appropriate 2-party Forecast/Planning Model; forecasts may be component supplier-specific.	Forecast/Planning Model 1, 2, 3 or 4; MA is buyer, DS is seller.
4.	DS sends consolidated forecast to CS; forecasts may be end customer-specific.	Forecast/Planning Model 1, 2, 3 or 4; CM is buyer, CS is seller.
5.	(Optional) If forecast is not customer specific, DS may send order status to CS which is broken down by end-customer.	870/INVRPT/OSTRPT (OSTRPT available in D.97A; INVRPT may be used in versions where OSTRPT not available).
6.	CS ships to DS and sends Ship Notice. DS ships to MA and sends Ship Notice. Parties use appropriate shipment models in two-party mode (MA with DS and DS with CS).	See Shipment Models.
7.	Billing and Payment cycle initiated. Parties use appropriate billing models in two-party mode (MA with DS and DS with CS).	See Billing Models (in development) and Payment Models.

### Other Usage Recommendations

- EIDX is not recommending what business processes or reasons may lead to a decision to use this type of forecasting, but rather, when usage is decided, EIDX will make recommendations on specific transaction/message segment and code usage that will enable the process.



**Forecast/Planning Model 8 – SMI – Third-Party Warehouse**



## EIDX Forecast/Planning Business Models

### Attributes (Summary)

Buyer sends planning schedule containing gross requirements, inventory levels, and min/max inventory targets. Seller nets forecast data to determine ship requirements based on buyer's inventory levels and min/max targets. Buyer needs to track receipts and inventory levels at third party warehouse in order to send receipt data and total on-hand inventories to seller. Seller uses receipt data to calculate in-transit quantities (embedded Receipt Advice).

### Attributes (Detail) and Transaction/Message Recommendations

Step	Description	Transaction/Message Recommendation
1.	Parties may precede orders with quoting or contracting cycles.	See Pre-Order Models
2.	Buyer and seller establish blanket purchase order.	Use Order Model 3 – Blanket PO, Forecast Releases
3.	Buyer generates planning schedule with gross requirements, inventory levels, receipt data and minimum and maximum inventory level targets; seller nets forecast data to determine ship requirements	830/DELFOR
4.	Seller may need to send ship notice data so buyer can track status and send identifiers back with the receipt data (embedded Receipt Advice in planning schedule).	856/DESADV
4a.	Alternative: Seller sends ship notice to 3 <sup>rd</sup> Party Warehouse and 3 <sup>rd</sup> Party warehouse forwards a copy to the Buyer.	856/DESADV
5.	Buyer forwards copy of Ship Notice to 3 <sup>rd</sup> Party Warehouse so that the warehouse can create an open receivable.	856/DESADV
5a.	Alternative: Seller sends copy of Ship Notice to 3 <sup>rd</sup> Party Warehouse.	
6.	3 <sup>rd</sup> Party Warehouse sends Receipt Advice to Buyer so that buyer can increment inventory and capture receipt data for inclusion in next planning schedule.	944/RECADV. 861 may be used instead of 944.
7.	3 <sup>rd</sup> Party sends Warehouse Inventory Adjustment advice as need.	941/INVRPT.
8.	Billing and Payment cycle initiated.	See Billing Models (in development) and Payment Models.

### Other Usage Recommendations

- Use with Inventory Model for Third-Party Warehouse (to be developed).
- Not recommended for use with consignment process.

## EIDX Forecast/Planning Business Models

<b>Issues Log</b>
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<i>Issue Log Category</i>	<b>Description</b>	<b>Responsibility</b>	<b>Open Date</b>	<b>Close Date</b>	<b>Status / Resolution</b>
Forecast/ Planning Business Models	Request made to add a business model for acknowledgments to forecasts.	Ida Mata	9/95		This is out of scope for the current status of the Forecast/Planning Models. Another model can be added in the future. See Attachment "A".
Forecast/ Planning Business Models	Request made to add a business model in which 855/ORDRSP or 865/ORDCHG are used to convey releases against forecasts.	tbd	9/95		This is out of scope for the current status of the Forecast/Planning Models. Another model can be added in the future.

## EIDX Forecast/Planning Business Models

### Summary

EIDX recommends simplifying implementation processes by eliminating any process steps unnecessary for both Trading Partners. It is encouraged that companies find ways to embrace the EIDX recommendations for forecast/planning processes, which will allow consistent implementations within the electronics industry. However, trading partners' systems and internal process limitations may require deviations from the EIDX process flow. Nevertheless, the goal of eliminating unnecessary steps from business operations makes the benefits of implementing processes per EIDX recommendations worth the effort.