

# Extending Advanced Pricing to Custom Applications

Chris Herdic  
oAppsNET

# Pricing Before R11i QP

- Price Lists
- Pricing Agreements
- Customizations to meet Business Requirements
- Market Demands
- “.. I’ll give you what ever you need... just give me a price..”

# R11i releases new QP Module

- New Pricing Engine
- Preserved Existing Pricing Entities
- New Concepts
- Flexible
- Extendable Architecture
- Application Program Interfaces (APIs)

# Price Lists

- Starting point for a pricing transaction
- List Price of an Item
- Currency
- Effective Dates

# Price Lists <New>

- List price for a group of Items
  - Item Categories
- List price derived by Formulas
  - Dynamic
  - Static
- Secondary Price Lists
- “Qualify” for Price Lists

# Qualifiers

- Rules governing the eligibility for a price
- Identifies the “Attributes” of a transaction that enable a price
- Qualifier Groups
- Used to Qualify Price Lists
- Used to Qualify Modifiers

# Modifiers

- Pricing Discounts
- Price Breaks
- Benefits and Accruals
- Surcharges
- Payment and Freight Terms
- Promotional Items (By-One / Get-One)
- Manually Applied Adjustments

# Modifier Components

- Currency
- Apply to transaction Header or Line
- Pricing Phase – When to evaluate and apply
  - Entering a Line
  - Saving the Order
  - Booking the Order
  - Shipping the Order



# Modifier Components

- Item or Item Category that is eligible
- Buckets (subtotals) from which a discount is applied
- Incompatibility
- Precedence
- Rules that will Qualify for the Modifier

# Formulas

- Series of Mathematical Expression interpreted to derive a value
- Apply to Price List Lines and Modifiers
- Entry point for GET\_CUSTOM\_PRICE

# Concepts Related

- Price Lists and Modifiers can be “Qualified”
- List Prices calculated by a Formula
- Modifier Discounts, New Price, Lump Sum calculated by Formula

# New Pricing Concepts

- Flexible Architecture
- Abstract
- Extendable

# Pricing Transaction Entities

- Type of transaction to be priced
  - Orders
  - Purchasing (11.5.10)
  - Demand Logistics

# Request Types

- Many for a Pricing Transaction Entity
- Usually an Application requesting a price
  - Order Capture (ASO)
  - Order Management (ONT)
  - Service Contracts (OKC)
- Names the PL/SQL Structure to capture all attributes of a transaction
- “.. I’ll give you what ever you need... just give me a price..”

# Request Type Definition

Pricing Transaction Entity - Source System and Request Types

**Pricing Transaction Entity**

Name:

Description:

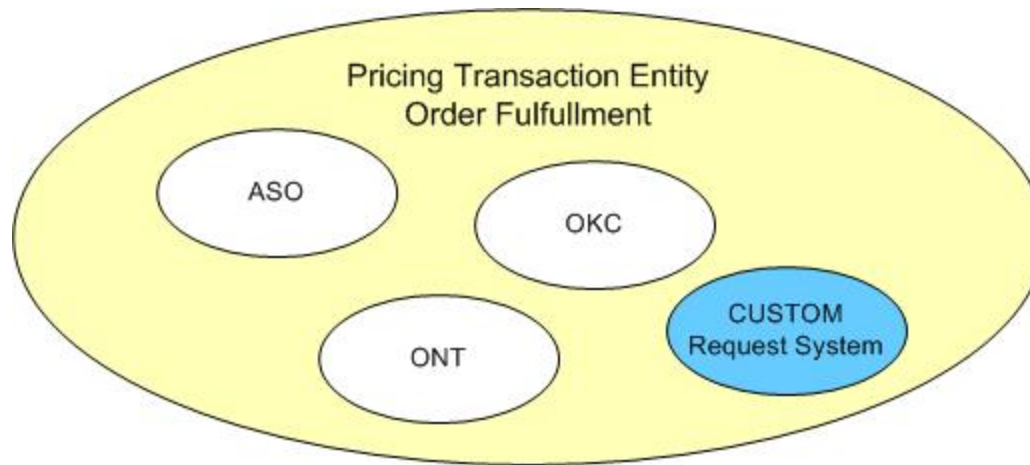
Source Systems | Request Types

Code	Description	Header Structure		Header View		Enabled
		Line Structure	Line View	Line View	Line View	
ASO	Order Captu	ASO_PRICIN	ASO_PRICIN			<input type="checkbox"/>
OKC	Oracle Cont	OKC_PRICE_	OKC_PRICE_			<input type="checkbox"/>
<b>ONT</b>	<b>Order Mana</b>	<b>OE_ORDER</b>	<b>OE_ORDER_</b>			<input checked="" type="checkbox"/>

Editor: OE\_ORDER\_PUB.G\_HDR

OK Cancel Search

# Extend a Request Type





# Contexts and Attributes

- Attribute
  - Element that captures transaction values used by the pricing engine to determine a price
  - Consolidated point for information from various transactions
- Context
  - Logical grouping of attributes

# Context Types .. Qualifier

- Collection of Contexts and Attributes used to Qualify a price
  - Examples:
    - CUSTOMER
    - ORDER
- QUALIFIER\_ATTRIBUTE1 to QUALIFIER\_ATTRIBUTE99
  - Use QUALIFIER\_ATTRIBUTE31 or greater for custom use

# Context Types .. Pricing

- Defines eligibility for a price
- Can be referenced in a Formula
- The value of a Pricing Attribute can be captured at the time a transaction is entered
- PRICING\_ATTRIBUTE31 or greater for custom use

# Pricing Contexts

Advanced Pricing - Pricing Transaction Entity - Attribute Linking

Pricing Transaction Entity **Order Fulfillment** Context Type **Pricing Context**

Show Linked Contexts

**Contexts**

Assigned to PTE		Code	Name	Description	Seeded	
<input type="checkbox"/>	<input type="checkbox"/>				Enabled	
<input type="checkbox"/>	<input type="checkbox"/>	Global Data Elem	Global Data Elements	Global Data Element Context	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	LOGISTICS	Logistics	Logistics Exchange Context	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	OTA	OTA Pricing	OTA Pricing Context	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	PRICING ATTRIBU	Pricing Attribute	Pricing Attribute Context	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	VOLUME	Volume	Volume Context	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Upgrade Context	Upgrade Context	Upgrade Context	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>

# Pricing Context .. Pricing Attributes

Context Setup - Advanced Pricing - PRICING ATTRIBUTE ( Pricing Attribute )

**Context**

Type	Code	Name	Description	Seeded	Enabled	[ ]
Pricing Context	PRICING ATTRIE	Pricing Attribute	Pricing Attribute Context	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Attributes**

Code	Name	Precedence	Application Name	Column Mapped	V
QC_GRADE	Grade	782	Advanced Pricing	PRICING_ATTRIBUTE19	OPM_Q
PRICING_ATTRI	PRICING_ATTRIBUTE1	781	Advanced Pricing	PRICING_ATTRIBUTE18	
PARENT_LIST_F	Parent List Price	710	Advanced Pricing	PRICING_ATTRIBUTE10	QP: Nu
MODEL_ID	Model Id	790	Advanced Pricing	PRICING_ATTRIBUTE1	QP_ITE
INSURANCE_CO	Insurance Cost	730	Advanced Pricing	PRICING_ATTRIBUTE12	QP: Nu
HANDLING_COS	Handling Cost	740	Advanced Pricing	PRICING_ATTRIBUTE13	QP: Nu

Restore Defaults Value Sets

# Context Types .. Product

- Capture information related to an ITEM.
- Values derived from Item Categories and Item Segments
- Identifies what is being priced
- Uses same physical columns as Pricing Attributes
- Cannot define custom Context
- Can define custom Attributes

# Product Contexts

Context Setup - Advanced Pricing - ITEM (Item)

**Context**

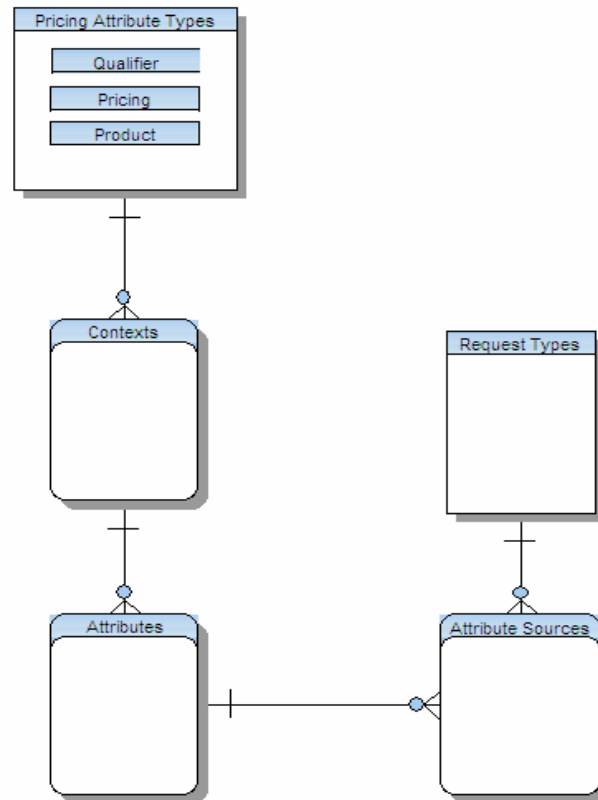
Type	Code	Name	Description	Seeded	Enabled	
Product Context	ITEM	Item	Item Context	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	[ ]
				<input type="checkbox"/>	<input type="checkbox"/>	

**Attributes**

Code	Name	Precedence	Application Name	Column Mapped	
<b>SEGMENT11</b>	SEGMENT_11	301	Advanced Pricing	PRICING_ATTRIBUTE14	
SEGMENT10	SEGMENT_10	300	Advanced Pricing	PRICING_ATTRIBUTE13	
SEGMENT1	SEGMENT_1	291	Advanced Pricing	PRICING_ATTRIBUTE4	
ITEM_CATEGOR	Item Category	290	Advanced Pricing	PRICING_ATTRIBUTE2	
INVENTORY_ITE	Item Number	220	Advanced Pricing	PRICING_ATTRIBUTE1	
ALL_ITEMS	ALL_ITEMS	315	Advanced Pricing	PRICING_ATTRIBUTE3	QP:ITE

Restore Defaults Value Sets

# Logical ERD





# Attribute Linking

- CONTEXT / ATTRIBUTE / VALUE
- CONTEXT = Logical Grouping of Attributes
- ATTRIBUTE = Place to capture a value
- VALUE
  - Link to Attribute to define the source that derives a value

# Attribute Source.. User Entered

- Pricing Context Type
- “Pricing Attribute” Context Code
- Compile Descriptive Flexfield Definition  
“Pricing Context”

## Attribute Source.. Custom Sourced

- *QP\_CUSTOM\_SOURCE.Get\_Attribute\_Values*
- Custom PL/SQL Code to derive a value
- Explicitly Assign to CONTEXT / ATTRIBUTE
- PL/SQL logic can extend to custom data source

# Attribute Source.. Attribute Mapping

- Custom PL/SQL to derive a value
  - Profile Option
  - PL/SQL API
  - PL/SQL API Multi Record
- *QP\_ATTR\_MAPPING\_PUB.Build\_Contexts*
  - API that assigns a value to the CONTEXT / ATTRIBUTE

# Example .. Custom Attribute

Advanced Pricing - Pricing Transaction Entity - Attribute Linking

Pricing Transaction Entity  Context Type

Show Linked Contexts

**Contexts**

Assigned to PTE	Code	Name	Description	Seeded	Enabled
<input checked="" type="checkbox"/>	ASOPARTYINFO	Party Information	Order Capture Party Information	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	CUSTOMER	Customer	Customer Context	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	CUSTOMER_GROL	Customer Group	Marketing Customer Group Conte	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Global Data Eleme	Global Data Elements	Global Data Element Context	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	INTERCOMPANY_I	Intercompany Invoicing	Context for Inventory Intercompai	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	LOGISTICS	Logistics	Logistics Exchange Context	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	MODLIST	Modifier List	Modifier List Context	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	ORDER	Order	Order Context	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

# Example .. Define Attribute

Context Setup - Advanced Pricing - CUSTOMER (Customer)

**Context**

Type	Code	Name	Description	Seeded	Enabled	[ ]
Qualifier Conte	CUSTOMER	Customer	Customer Context	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	[ ]
				<input type="checkbox"/>	<input type="checkbox"/>	[ ]

**Attributes**

Code	Name	Precedence	Application Name	Column Mapped	V
<b>CUSTOMER_CO</b>	<b>Customer Color</b>	260	Advanced Pricing	QUALIFIER_ATTRIBUTE35	15 Cha
CUSTOMER_CA	Customer Category	312	Advanced Pricing	QUALIFIER_ATTRIBUTE31	XX_CU:
SOLD_TO_ORG	Customer Name	260	Advanced Pricing	QUALIFIER_ATTRIBUTE2	QP_CU
SITE_ORG_ID	Site Use	270	Advanced Pricing	QUALIFIER_ATTRIBUTE5	QP_CU
SHIP_TO_PART	Ship To Party Site	380	Advanced Pricing	QUALIFIER_ATTRIBUTE17	QP_SH
SHIP_TO	Ship To	250	Advanced Pricing	QUALIFIER_ATTRIBUTE11	QP_SH

Restore Defaults    Value Sets

# Example .. Attribute Map

Link Attributes - (Order Fulfillment) (Qualifier Context - Customer)

Code	Name	Precedence	Level	Attribute Mapping Method	LOV Enabled	Use
INVOICE_TO_PA	Invoice To Party Site	400	BOTH	ATTRIBUTE MAPPING	<input checked="" type="checkbox"/>	<input type="checkbox"/>
PARTY_ID	Party ID	360	BOTH	ATTRIBUTE MAPPING	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SALES_CHANNE	Sales Channel	320	BOTH	ATTRIBUTE MAPPING	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SHIP_TO	Ship To	250	BOTH	ATTRIBUTE MAPPING	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SHIP_TO_PART	Ship To Party Site	380	BOTH	ATTRIBUTE MAPPING	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SITE_ORG_ID	Site Use	270	BOTH	ATTRIBUTE MAPPING	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CUSTOMER_CO	Customer Color	260	ORDER	ATTRIBUTE MAPPING	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SOLD_TO_ORG_	Customer Name	260	BOTH	ATTRIBUTE MAPPING	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Restore Defaults    Attribute Mapping

# Example.. Link Attribute

Attribute Mapping - (Order Fulfillment - Customer - Customer Color)

**Request Types**

Application name	Request Type	Description
	ASO	Order Capture
	OKC	Oracle Contracts Core
<b>Advanced Pricing</b>	ONT	Order Management Order

**Header Level**

Global Object name:

Seeded Source Type:

User Source Type:

Seeded Value String:

User Value String:

**Line Level**

Global Object name:

Seeded Source Type:

User Source Type:

Seeded Value String:

User Value String:

**Editor**

```
c_qp_source.get_customer_color(OE_ORDER_PUB.G_HDR.sold_to_org_id)
```

OK Cancel Search



# Example .. PL/SQL

```
CREATE OR REPLACE PACKAGE C_QP_SOURCE AS
/*
|| Package for custom attribute mappings
*/
FUNCTION get_customer_color
      (p_sold_to_org_id          IN      NUMBER)
RETURN QP_ATTR_MAPPING_PUB.t_multirecord;

END C_QP_SOURCE;
```

# Build Attribute Mapping Rules

- Concurrent Program to build calls to the linked PL/SQL Code
- Drops and re-creates package QP\_BUILD\_SOURCING\_PVT
- Execute when system is quiet, or during downtime

# QP\_BUILD\_SOURCING\_PVT

```
-- Src_Type: API_MULTIREC
BEGIN
    v_attr_mvalue :=
        c_qp_source.get_customer_color(OE_ORDER_PUB.G_HDR.sold_to_org_id);
EXCEPTION
    WHEN OTHERS THEN
        IF l_debug = FND_API.G_TRUE THEN
            oe_debug_pub.add('Multirec API error');
        END IF;
END;

IF (v_attr_mvalue.count <> 0) AND (v_attr_mvalue(1) IS NOT NULL) THEN
    v_index := 1;
    LOOP
        x_qual_ctxts_result_tbl(q_count).context_name := 'CUSTOMER';
        x_qual_ctxts_result_tbl(q_count).attribute_name := 'QUALIFIER_ATTRIBUTE35';
        x_qual_ctxts_result_tbl(q_count).attribute_value := v_attr_mvalue(v_index);
        q_count := q_count + 1;
        IF l_debug = FND_API.G_TRUE THEN
            oe_debug_pub.add('After product assigned');
        END IF;

        EXIT WHEN v_index = v_attr_mvalue.LAST;
        v_index := v_index + 1;
    END LOOP;
END IF;--v_attr_(m)value
```

# Get Custom Price

- API used to return a value for a formula line
- *QP\_CUSTOM.Get\_Custom\_Price*
- Incorporate custom PL/SQL logic to derive a value
- Formula is associated with:
  - Modifier Line as Application Method to calculate a value
  - Price List Line to calculate a List Price

# Define Formula

Advanced Pricing - Pricing Formulas

Name:   Seeded

Description:

Effective Dates:  -

Formula:  [  ]

**Formula Lines**

Formula Type	Pricing Attribute Context	Pricing Attribute	Component	Step	Reqd Flag
<b>Function</b>			GET CUSTOM PR	1	<input type="checkbox"/>
<b>Numeric Constant</b>			0	2	<input type="checkbox"/>
					<input type="checkbox"/>
					<input type="checkbox"/>
					<input type="checkbox"/>
					<input type="checkbox"/>
					<input type="checkbox"/>
					<input type="checkbox"/>
					<input type="checkbox"/>
					<input type="checkbox"/>

**Examine Field and Variable Values**

Block:

Field:

Value:

OK Cancel

Factors

# QP\_CUSTOM

```
FUNCTION Get_Custom_Price
(
  p_price_formula_id      IN NUMBER,
  p_list_price            IN NUMBER,
  p_price_effective_date IN DATE,
  p_req_line_attrs_tbl   IN
    QP_FORMULA_PRICE_CALC_PVT.REQ_LINE_ATTRS_TBL
)
RETURN NUMBER;
```

- Formula ID is passed in
- Pricing Attributes (REQ\_LINE\_ATTRS\_TBL) are passed in

# QP\_CUSTOM .. Extend

- Add Custom PL/SQL logic for specific Formula :

```
c_OAUG_Formula_ID := 7124; -- Formula ID corresponding to OAUG_Example
```

- Obtain parameters for function call:

```
l_sold_to_org_id := OE_ORDER_PUB.G_HDR.sold_to_ord_id;
```

- ... or from Pricing Attributes:

```
FOR i IN 1..p_req_line_attrs_tbl.count
LOOP
  -- Assign Inventory Item ID
  If (p_req_line_attrs_tbl(i).attribute_type = 'PRODUCT') and
     (p_req_line_attrs_tbl(i).context = 'ITEM') and
     (p_req_line_attrs_tbl(i).attribute = 'PRICING_ATTRIBUTE1')
  Then
    l_inventory_item_id := p_req_line_attrs_tbl(i).value;
  End If;
END LOOP;
```

# QP\_CUSTOM .. Extend

- Execute Custom PL/SQL

```
IF p_price_formula_id = c_OAUG_Formula_ID THEN
    l_disc_percent := c_formula.discount_percent
                    (l_sold_to_org_id
                    ,l_inventory_item_id );

    RETURN l_disc_percent;
END IF;
```



# Attach Formula

Advanced Pricing - Define Modifier

Main **Advanced**

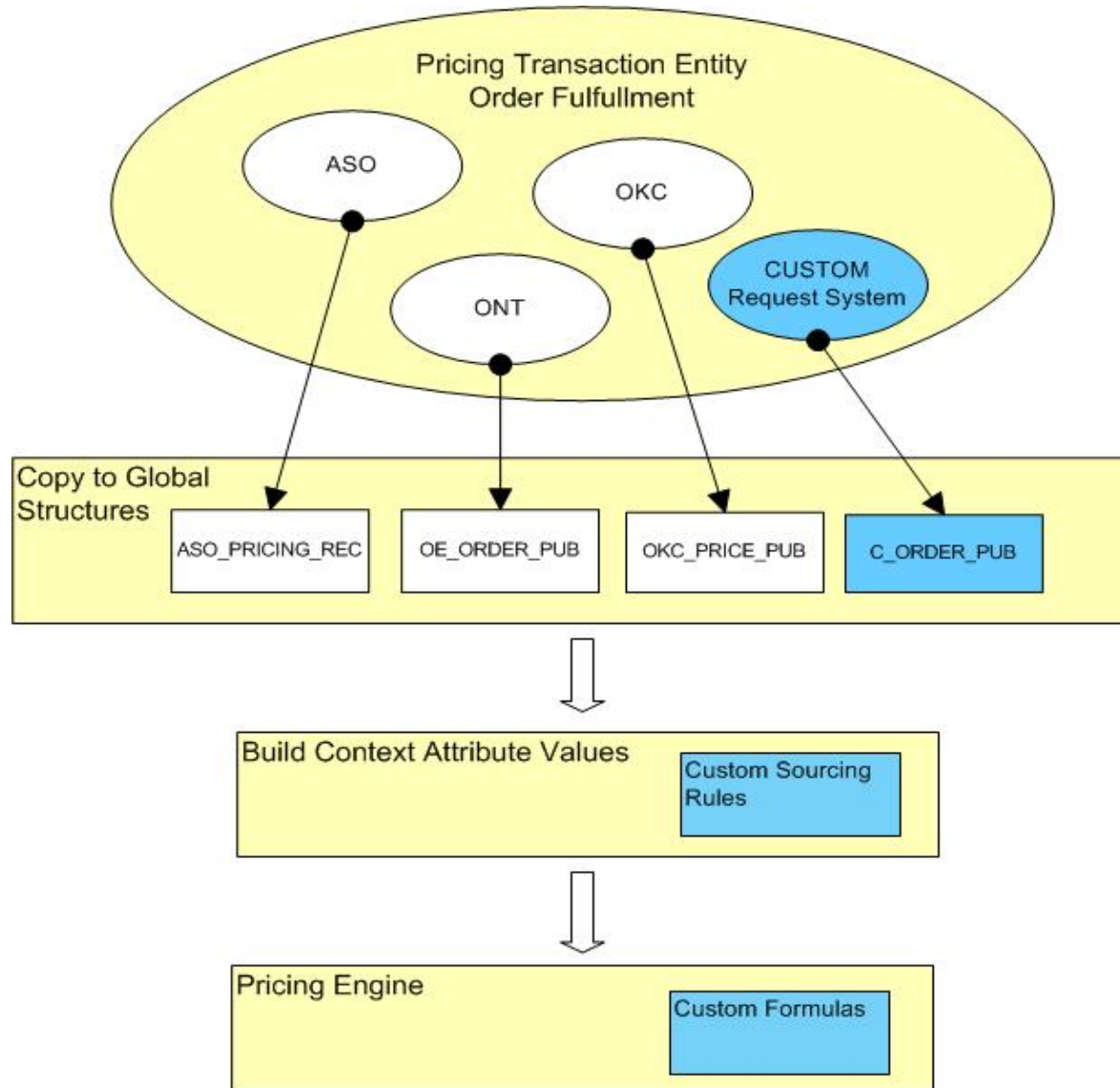
Type **Discount List**      Number **OAUG\_Example**       Active       Global  
 Name **OAUG\_Example**      Version        Automatic  
 Currency **USD**      Start Date  -   
 Description **Get Custom Price Example**      [  ]

List Limits      List Qualifiers

Modifiers Summary **Discounts/Charges** Promotion Upgrades Promotion Terms Coupons Price Breaks\*

Modifier No	Level	Modifier Type	Formula	Application Method	Value	Ac
<b>CUSTOM_DSC</b>	<b>Line</b>	<b>Discount</b>	<b>OAUG_Perc</b>	<b>Percent</b>		<input type="checkbox"/>
						<input type="checkbox"/>
						<input type="checkbox"/>
						<input type="checkbox"/>
						<input type="checkbox"/>

Line Limits      Exclude      Pricing Attributes      Line Qualifiers      Define Details\*



# Request Price

- API to the Pricing Engine
- Same Pricing Engine used by core Oracle Modules
- Retrieves List Price, Selling Price, and all qualified modifiers
- Called for a single transaction line or entire transaction

# Request Price ... Step 1

- Copy transaction information to Global Structures
- For Request Type ONT :
  - OE\_ORDER\_PUB.G\_HDR
  - OE\_ORDER\_PUB.G\_LINE

# Request Price ... Step 2

- Call *QP\_ATTR\_MAPPING\_PUB.Build\_Contexts*
  - API to resolve VALUES for CONTEXT / ATTRIBUTE pairs
- Call Build\_Contexts for transaction HEADER information
- Call Build\_Contexts for each transaction line

## Request Price ... Step 3

- Prepare *QP\_PREQ\_PUB.Price\_Request* parameters
  - Copy Build\_Sourcing values to Qualifier and Pricing Attribute structures
  - Populate Price\_Request Control Record
  - Populate Header and Line information
- Call *QP\_PREQ\_PUB.Price\_Request*

# Customization Considerations

- Evaluate the cost of doing business without the customization
  - Does the customization reduce the time to execute a change to meet changing market place requirements?
  - Does the customization minimize data errors during maintenance periods?
  - Does the customization provide a competitive advantage?
  - Does the customization enable your business the bandwidth to develop and explore new opportunities?

# Customization Costs

- What is the cost to develop and support?
- What is the cost and risk to patch and upgrade?



# Customization Dos

- Utilize CUSTOM.pll to enhance standard form logic
- Begin with TEMPLATE.fmb when creating custom forms
- Create custom component directory structure (\$C\_TOP)
- Register your custom application
- Utilize public APIs to manipulate Oracle Applications data
- Create view only views to Oracle Application data
- Use published APIs

# Customization Don'ts

- Alter Standard Application Database objects
- Modify existing Forms or Reports
- Modify PL/SQL packages unless documented (QP\_CUSTOM)
- Directly manipulate Oracle Applications data
- Use unpublished PL/SQL packages

# Extend Advanced Pricing

Thank You