COLLABORATE 19
TECHNOLOGY AND APPLICATIONS FORUM
FOR THE ORACLE COMMUNITY

# Let’s Make an Item

## Dynamically Create Your ATO/PTO Items

*Remember to complete your evaluation for this session within the app!*

**Session ID:**
**11222**

**Prepared by:**
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Tuesday, April 9, 2019

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# About O2Works

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# Agenda

- Introductions
- Interfaces vs APIs
- What is a Configured Item?
- Why Dynamically Create?
- Case Study Solution
- Questions

# Introductions

- Tammy Vandermey
  - Technical EBS Consultant, O2Works, LLC
  - Over 25 years technical implementation experience in Oracle EBS
  - Presenting at OAUG since 2001
  - Contact Information: tammy@o2works.com

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# Interfaces and APIs

# Oracle EBS - Interfaces

- Populate data to a staging table
- Manipulate data in staging table
- Execute Concurrent Program to run Import Program
- Evaluate Results and Errors
- Fix Errors and re-submit

- Oracle provided Concurrent Programs and Error Handling
- Error Correction Forms (Order Import)

# Oracle EBS - APIs

- Application Program Interfaces
  - PL/SQL packages provided by Oracle to allow you to interact and insert, update, and delete data from EBS outside of the online environment.
  - Allows for more flexibility and options in process execution
  - Developer maintains more control over the order of execution and error handling
  - API's provide better feedback to program for developer use. IDs for records created.

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# Configured Items

# Assemble-to-Order Model (ATO Configuration)

- **Assemble-to-Order model consists of:**
  - **Model Bill of material with optional items and option selection rules**
  - **Configuration created from mandatory components and selected options**
- **Assemble-to-Order Item consists of:**
  - **Standard Bill of material with standard components**
  - **Item manufactured from standard components**

# THREE TYPES OF ATO ITEMS

1. AutoCreated Configuration Item
   - ATO Flag is selected on the OM Tab of the item master
   - Base model is defined on the BOM tab of the item master
   - Autocreated configuration flag is selected

2. Preconfigured Items
   - The ATO flag is selected on the OM tab of the item master
   - A Base Model defined on the BOM tab of the item master

3. Standard ATO Items

# Pick-to-Order Model (PTO Configuration)

- Pick-to-Order model consists of:
  - Model bill of material with optional items and option selection rules
  - Pick slip used to kit included items and selected options

- Pick-to-Order Item (Kit)
  - Kit consists of:
    - Standard bill of material with mandatory included items
    - Pick slip used to kit included items

# Item Types

- MODEL
- OPTION CLASS
- OPTION
- PURCHASED ITEM
- KIT

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# Dynamic Creation

# What’s the Point?

- External Systems feeding into Oracle
- Batch Processing
- Pre-Validation of Configurations

# Design Options

- Bill of Materials and Item Interface
- Order Import
- Order API

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# Case Study

# Client Requirements

- Client has branch facility running Microsoft Dynamics for Order Management
- Orders will be sent to Oracle to create orders
- Manufacturing done in Oracle
- Items will be ATO, PTO, and KITs
- Need to valid that configurations selected in MS Dynamics prior to order completion in MS Dynamics
- MS Dynamics does not contain the Option Class Structure, only option values.
- Configured Item Number should be sent back and will be used to place actual order in future.

# Design Solution

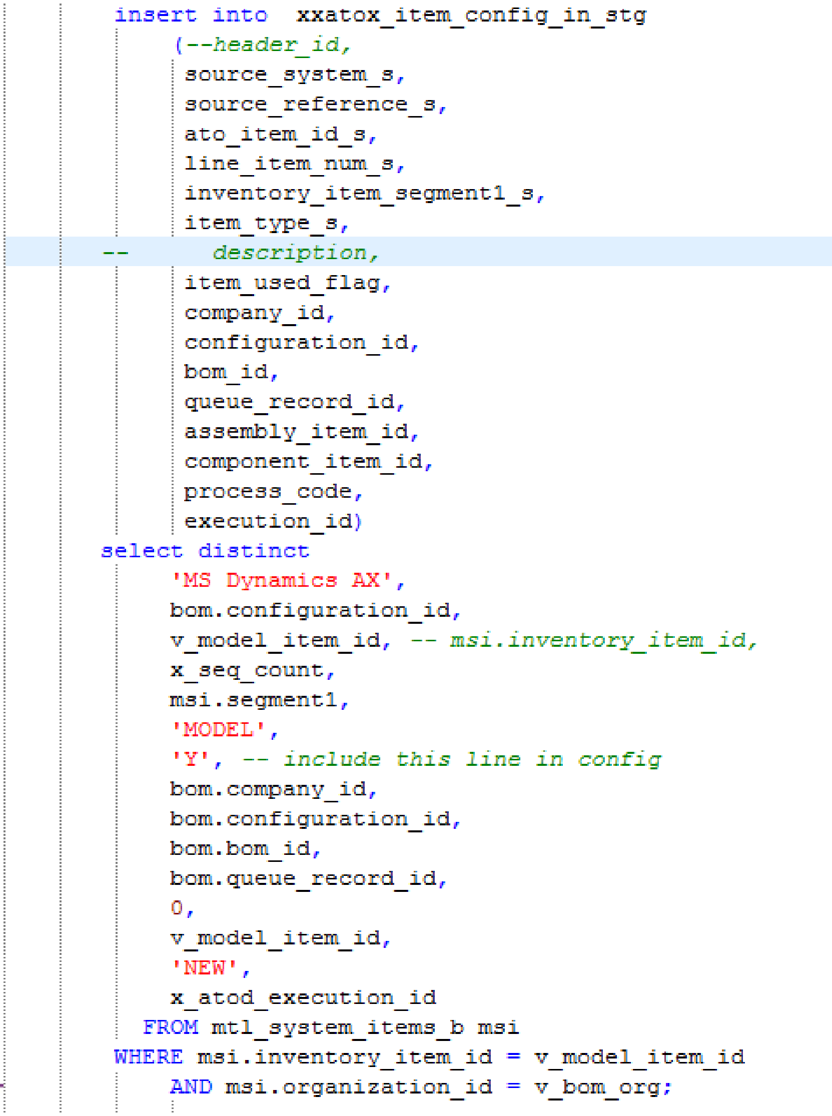
- Interface sends across a file with Item Model and Options
- Load to Staging table
- Pre processor to massage data
- Process sent options against preprocessor data to select all options and option classes needed

# Design Solution

- Load all necessary model, option and option class lines into Order import (or Order API)
- Run Order Import
- Run AutoCreate Config Items
- Execute Query to find newly created Config item Number
- Interface to send Error message or New Config number back to MS Dynamics

# Pre Process Item Data

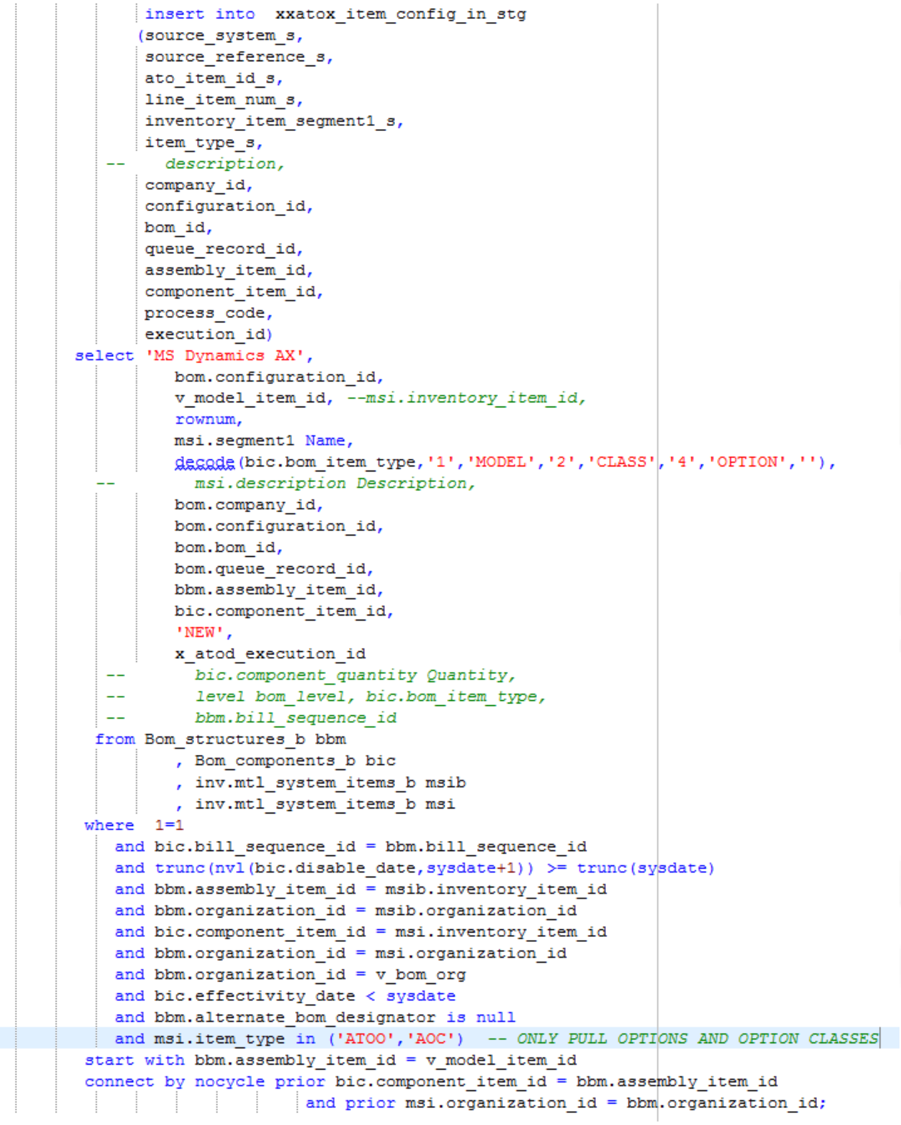
Insert the Model



```
 insert into  xxatox_item_config_in_stg
     (--header_id,
      source_system_s,
      source_reference_s,
      ato_item_id_s,
      line_item_num_s,
      inventory_item_segment1_s,
      item_type_s,
--        description,
      item_used_flag,
      company_id,
      configuration_id,
      bom_id,
      queue_record_id,
      assembly_item_id,
      component_item_id,
      process_code,
      execution_id)
select distinct
     'MS Dynamics AX',
     bom.configuration_id,
     v_model_item_id, -- msi.inventory_item_id,
     x_seq_count,
     msi.segment1,
     'MODEL',
     'Y', -- include this line in config
     bom.company_id,
     bom.configuration_id,
     bom.bom_id,
     bom.queue_record_id,
     0,
     v_model_item_id,
     'NEW',
     x_atod_execution_id
   FROM mtl_system_items_b msi
 WHERE msi.inventory_item_id = v_model_item_id
     AND msi.organization_id = v_bom_org;
```

# Pre Process Item Data

Insert Options and Option Classes



```
       insert into  xxatox_item_config_in_stg
      (source_system_s,
       source_reference_s,
       ato_item_id_s,
       line_item_num_s,
       inventory_item_segment1_s,
       item_type_s,
   --    description,
       company_id,
       configuration_id,
       bom_id,
       queue_record_id,
       assembly_item_id,
       component_item_id,
       process_code,
       execution_id)
select 'MS Dynamics AX',
          bom.configuration_id,
          v_model_item_id, --msi.inventory_item_id,
          rownum,
          msi.segment1 Name,
          decode(bic.bom_item_type,'1','MODEL','2','CLASS','4','OPTION',''),
  --        msi.description Description,
          bom.company_id,
          bom.configuration_id,
          bom.bom_id,
          bom.queue_record_id,
          bbm.assembly_item_id,
          bic.component_item_id,
          'NEW',
          x_atod_execution_id
   --       bic.component_quantity Quantity,
   --       level bom_level, bic.bom_item_type,
   --       bbm.bill_sequence_id
  from Bom_structures_b bbm
          , Bom_components_b bic
          , inv.mtl_system_items_b msib
          , inv.mtl_system_items_b msi
 where  1=1
    and bic.bill_sequence_id = bbm.bill_sequence_id
    and trunc(nvl(bic.disable_date,sysdate+1)) >= trunc(sysdate)
    and bbm.assembly_item_id = msib.inventory_item_id
    and bbm.organization_id = msib.organization_id
    and bic.component_item_id = msi.inventory_item_id
    and bbm.organization_id = msi.organization_id
    and bbm.organization_id = v_bom_org
    and bic.effectivity_date < sysdate
    and bbm.alternate_bom_designator is null
    and msi.item_type in ('ATOO','AOC')  -- ONLY PULL OPTIONS AND OPTION CLASSES
 start with bbm.assembly_item_id = v_model_item_id
 connect by nocycle prior bic.component_item_id = bbm.assembly_item_id
                       and prior msi.organization_id = bbm.organization_id;
```

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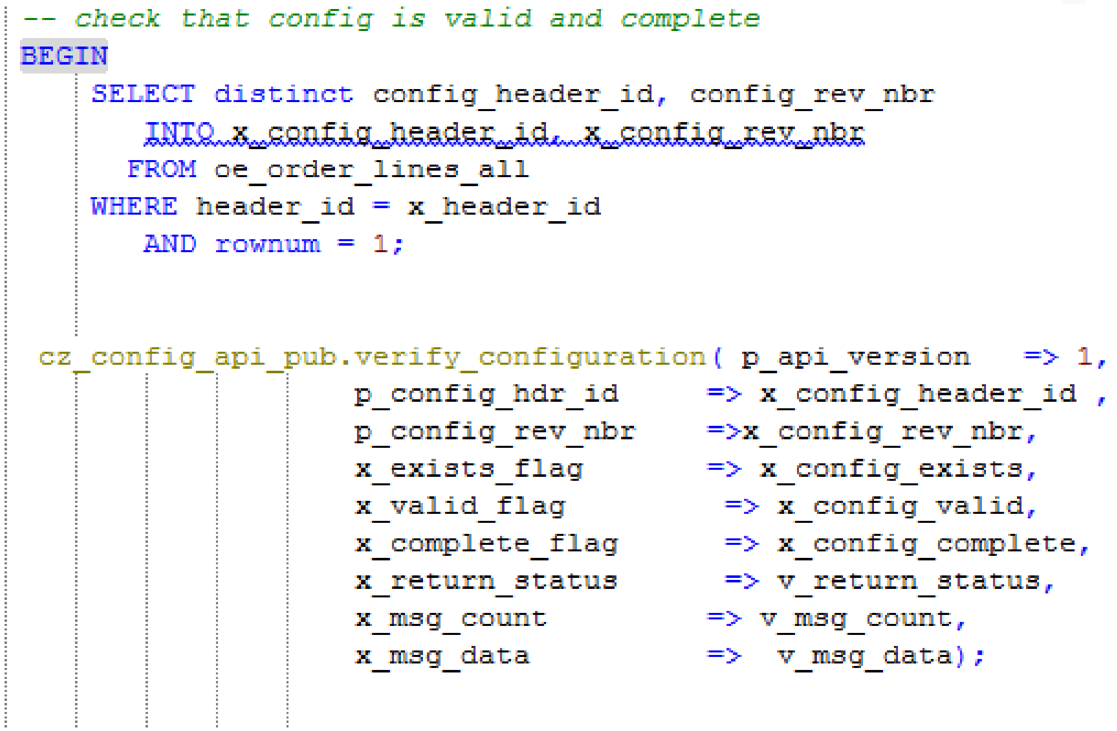
# Process Item Selections

- Update staging table, setting the item_used_flag = Y for all options selected.
- If File doesn’t include Option Classes, you will need to do some hierarchical looping to check the option classes for all
  - ★ OPTION CLASS A
    - OPTION CLASS A.1
      - OPTION BLACK
      - OPTION BLUE
      - OPTION SILVER
    - ★ OPTION CLASS A.2
      - OPTION PINK
      - ★ OPTION ORANGE
      - OPTION GOLD

# Create Order via Order Import or Order APIs

- Line data should be populated as it would be if you had entered manually
- 1.0 Model Number
  - 1.1 Option Class
    - 1.1.1 Option
  - 1.2 Option
    - 1.2.1 Option Class

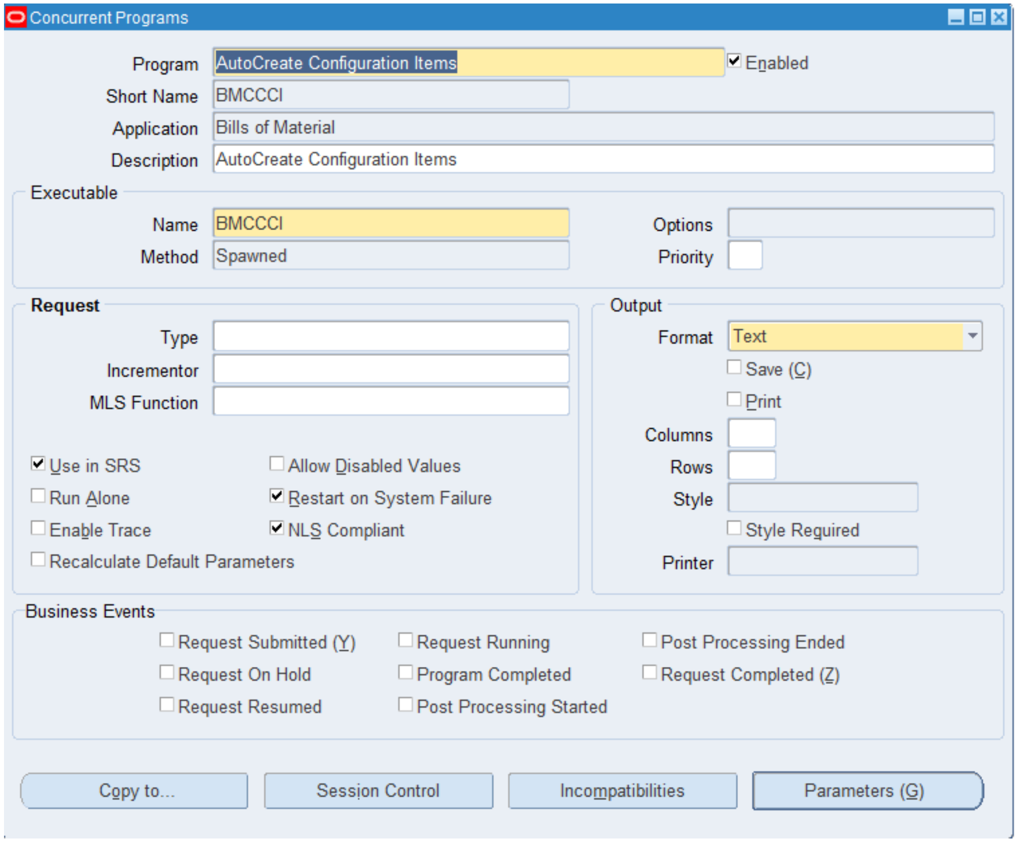
# Verify Config is Complete



```
-- check that config is valid and complete
BEGIN
    SELECT distinct config_header_id, config_rev_nbr
       INTO x_config_header_id, x_config_rev_nbr
      FROM oe_order_lines_all
    WHERE header_id = x_header_id
       AND rownum = 1;


 cz_config_api_pub.verify_configuration( p_api_version   => 1,
                   p_config_hdr_id     => x_config_header_id ,
                   p_config_rev_nbr    =>x_config_rev_nbr,
                   x_exists_flag       => x_config_exists,
                   x_valid_flag         => x_config_valid,
                   x_complete_flag      => x_config_complete,
                   x_return_status      => v_return_status,
                   x_msg_count         => v_msg_count,
                   x_msg_data          =>  v_msg_data);
```

# Submit AutoCreate Config Items



Concurrent Programs

Program: AutoCreate Configuration Items ☑ Enabled

Short Name: BMCCCI

Application: Bills of Material

Description: AutoCreate Configuration Items

Executable

Name: BMCCCI

Options:

Method: Spawned

Priority:

Request

Type:

Incrementor:

MLS Function:

☑ Use in SRS
□ Run Alone
□ Enable Trace
□ Recalculate Default Parameters
□ Allow Disabled Values
☑ Restart on System Failure
☑ NLS Compliant

Output

Format: Text

□ Save (C)

□ Print

Columns:

Rows:

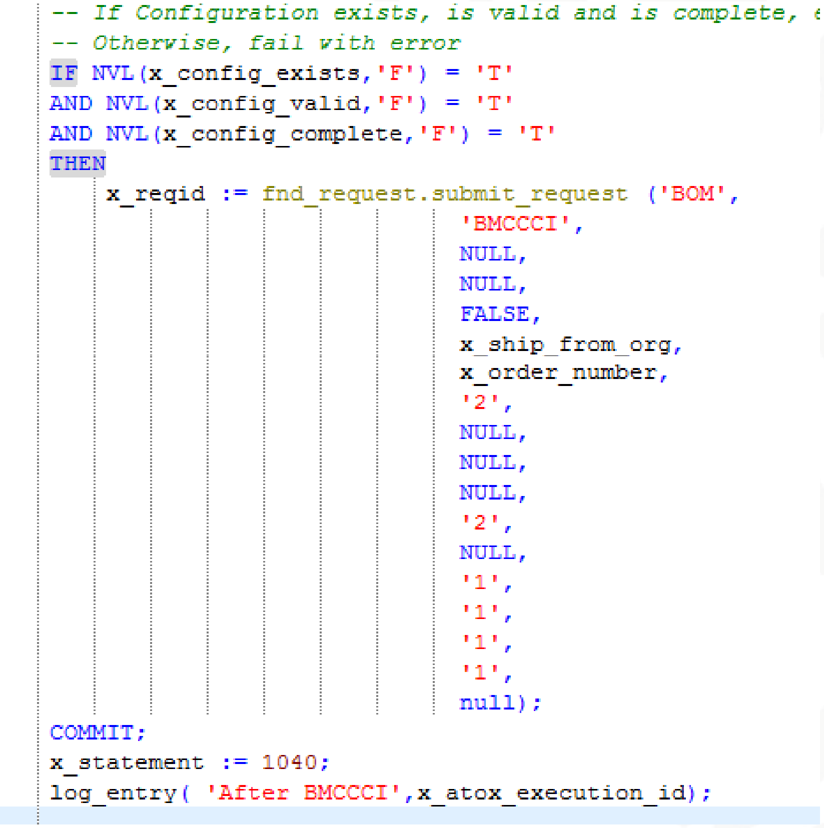
Style:

□ Style Required

Printer:

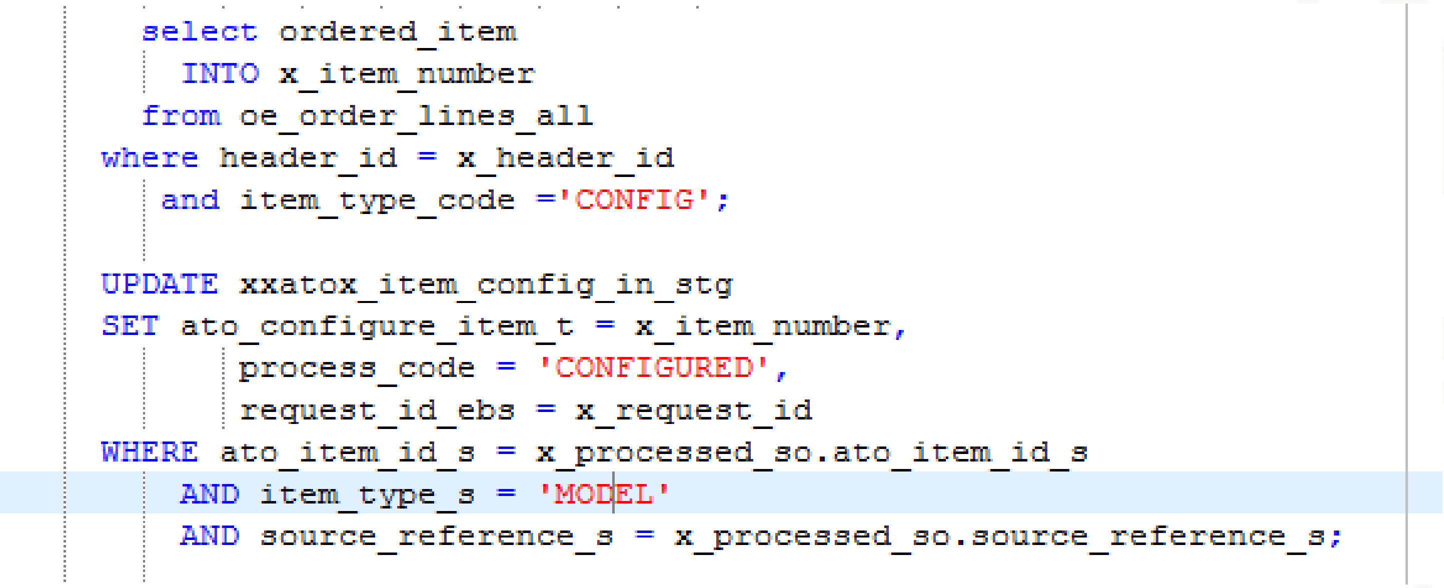
Business Events

□ Request Submitted (Y)
□ Request On Hold
□ Request Resumed
□ Request Running
□ Program Completed
□ Post Processing Started
□ Post Processing Ended
□ Request Completed (Z)



```
-- If Configuration exists, is valid and is complete,
-- Otherwise, fail with error
IF NVL(x_config_exists,'F') = 'T'
AND NVL(x_config_valid,'F') = 'T'
AND NVL(x_config_complete,'F') = 'T'
THEN
    x_reqid := fnd_request.submit_request ('BOM',
                                   'BMCCCI',
                                   NULL,
                                   NULL,
                                   FALSE,
                                   x_ship_from_org,
                                   x_order_number,
                                   '2',
                                   NULL,
                                   NULL,
                                   NULL,
                                   '2',
                                   NULL,
                                   '1',
                                   '1',
                                   '1',
                                   '1',
                                   null);
COMMIT;
x_statement := 1040;
log_entry( 'After BMCCCI',x_atox_execution_id);
```

# Find Config Item Number



```
  select ordered_item
    INTO x_item_number
  from oe_order_lines_all
where header_id = x_header_id
   and item_type_code ='CONFIG';

UPDATE xxatox_item_config_in_stg
SET ato_configure_item_t = x_item_number,
       process_code = 'CONFIGURED',
       request_id_ebs = x_request_id
WHERE ato_item_id_s = x_processed_so.ato_item_id_s
    AND item_type_s = 'MODEL'
    AND source_reference_s = x_processed_so.source_reference_s;
```

# Return Config Item to Calling System and Cleanup

- Interface created to call MS DAX and return back the Config Item Number, which will then be used on a future order sent to Oracle.
- PL/SQL will delete the Order from the system
  - This can be done at the end of processing or it could be a cleanup step prior to the start of every run

# Suggested Setups

- Order Transaction Type exclusive for this item creation process
- Dummy Customer for the Orders being created in this process
- BOMs and Configurations need to be setup for the models

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# Questions?

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