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Presented by:

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Oracle Workflow and Approval Hierarchies

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Overview
Requisition Approval: 3 Case Studies

- **Medium Size manufacturing company using 11i Core Apps Purchasing.**

- **Medium Size Property Management company (REIT) using 11i I-Procurement.**

- **Large Fortune 500 Bank using I-Procurement (with 11.03 Purchasing).**

Basic Components in Approval

- **Approval can be either by supervisor or by a hierarchy of positions**

- **Based on preparer, Oracle will build a list of approvers up to first person who can approve**

- **Approval routing based on document types**

- **Direct vs. Hierarchy Forward Method: straight to first person with approval authority or all approvers in the chain until first approver**

- **Approval Routing vs Security of Documents**

Limitations of Standard Oracle

- **Approval Routing based on preparer, not requestor**

- **Only one hierarchy can be tied to a document type (Purchasing Requisition is a document type)**

- **Timeout functionality is limited to fixed value before 11i**

- **Difficult to use position hierarchy in large organization**

- **Customizing notifications is not simple**

- **Risk of infinite loop in approval hierarchy if no approver can be found**

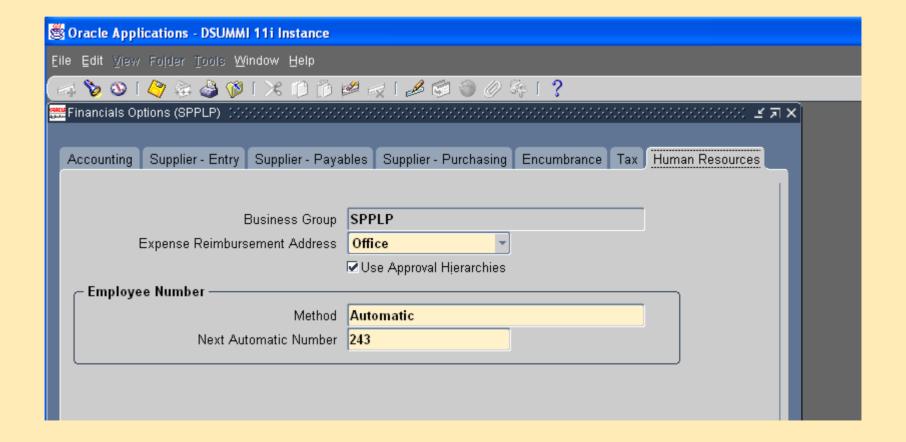- **Timeout will not escalate beyond the approval list built when requisition created**

Setting Up An Approval Hieracrchy

- **Turn on approval hierarchy**
- **Create positions and assign positions to employees**
- **Create hierarchy and fill in positions**
- **Attach hierarchy to document type**
- **Create approval groups and set rules in approval groups**
- **Assign approval group to position**
- **Run Fill Employee Hierarchy**

Turn on Approval Hierarchy
Purchasing Super User => Setup => Organizations => Financial Options => Human Resources tab
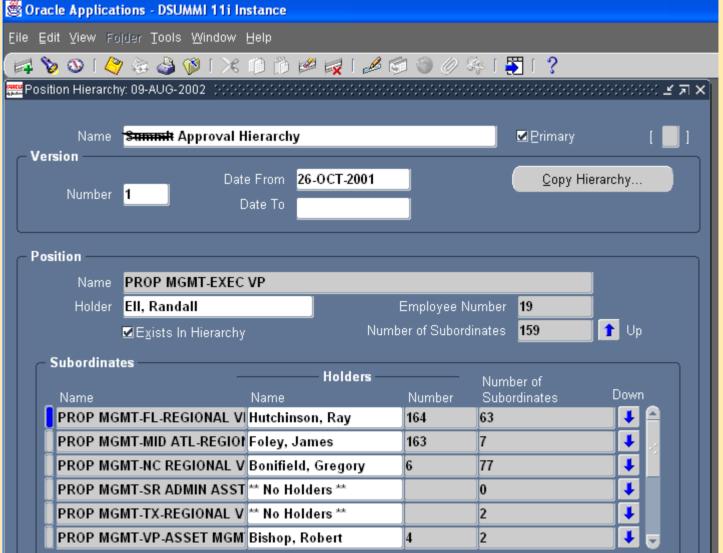
Create Positions
Purchasing Super User => Setup => Personnel => Position

Create Hierarchy and Fill in Positions
Purchasing Super User =>
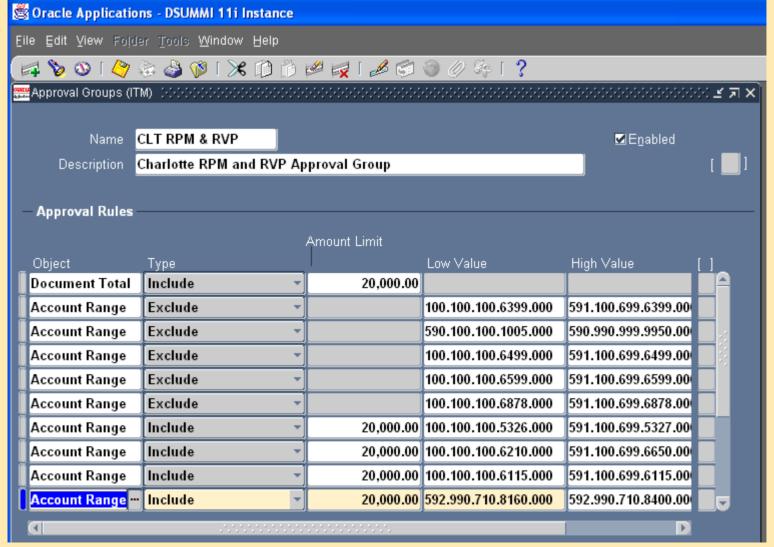## Setup => Personnel => Position Hierarchy
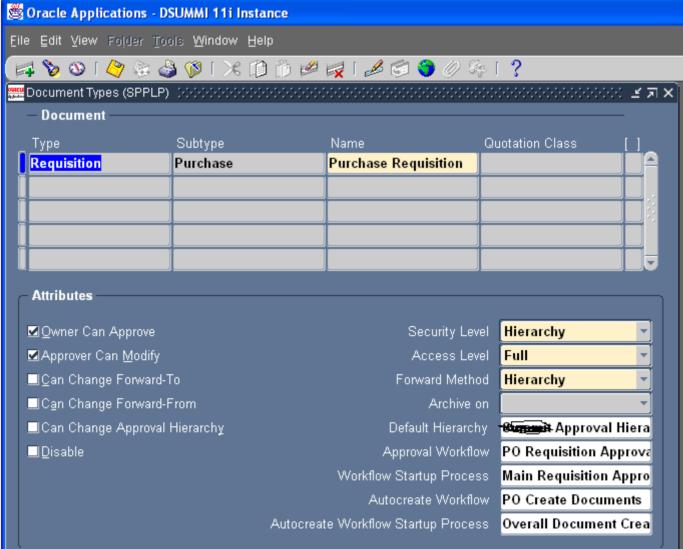
Attach Hierarchy to Document Type
Purchasing Super User =>

Setup => Purchasing => Document Types => Purchase Requisition

Create Approval Groups and Rules
Purchasing Super User =>
Setup => Approvals => Approval Groups

Oracle Applications - DSUMMI 11i Instance

File Edit View Folder Tools Window Help

Approval Groups (ITM)

Name **CLT RPM & RVP** ☑ Enabled

Description **Charlotte RPM and RVP Approval Group** [▢]

Approval Rules

Object	Type	Amount Limit	Low Value	High Value	[ ]
Document Total	Include	20,000.00			
Account Range	Exclude		100.100.100.6399.000	591.100.699.6399.00	
Account Range	Exclude		590.100.100.1005.000	590.990.999.9950.00	
Account Range	Exclude		100.100.100.6499.000	591.100.699.6499.00	
Account Range	Exclude		100.100.100.6599.000	591.100.699.6599.00	
Account Range	Exclude		100.100.100.6878.000	591.100.699.6878.00	
Account Range	Include	20,000.00	100.100.100.5326.000	591.100.699.5327.00	
Account Range	Include	20,000.00	100.100.100.6210.000	591.100.699.6650.00	
Account Range	Include	20,000.00	100.100.100.6115.000	591.100.699.6115.00	
Account Range ···	Include	20,000.00	592.990.710.8160.000	592.990.710.8400.00	

Assign Approval Group to Position
Purchasing Super User =>
Setup => Approvals => Assign Approval Groups

Fill Employee Hierarchy

- **Concurrent program that can be scheduled to run regularly**

- **Fill Employee Hierarchy must be run after any change to employee, positions, or position hierarchy**

- **In a position hierarchy in a large organization, there can be performance problems running Fill Employee Hierarchy**

Miscellaneous Notes on Hierarchies

- A position hierarchy can be used for both approval routing and for document security

- A position hierarchy can be used for security, while approval routing is done by supervisor

- To set up positions, the Key Flexfield Position Name must be set up first

- One position can be used in multiple hierarchies

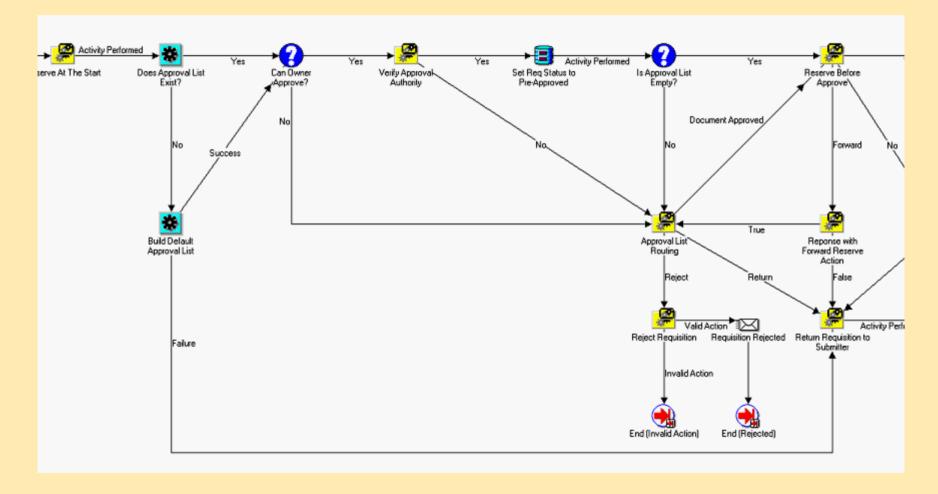- One position can only be used once in a single hierarchy

Case 1

- **Medium Size manufacturing company**

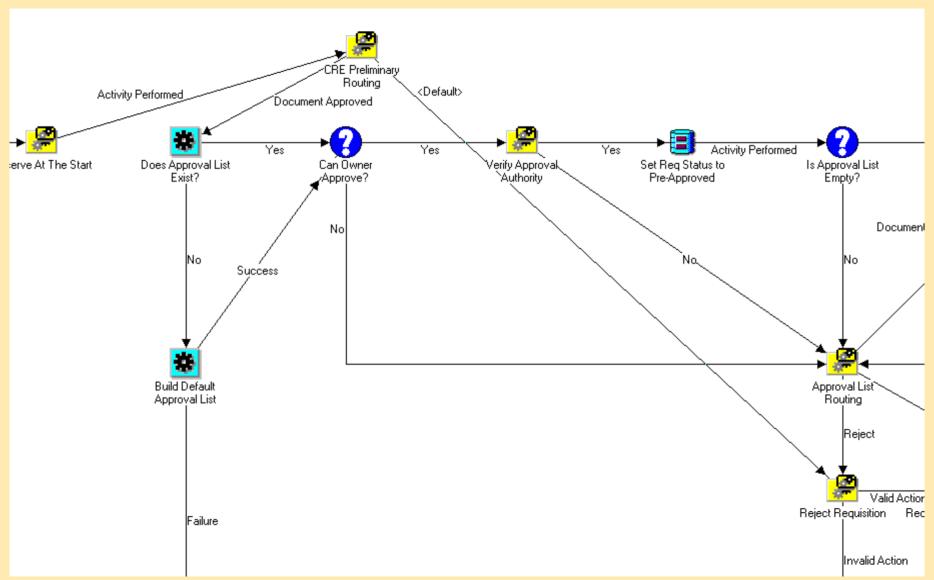- **11i Purchasing using Core Apps**

- **Needs to route requisitions to additional approvers (in addition to the normal supervisor approval required) depending on the size of the requisition and the type of item being ordered (in particular, a purchasing manager for all requisitions over a certain dollar limit and a specialist if the item is a hazardous item)**

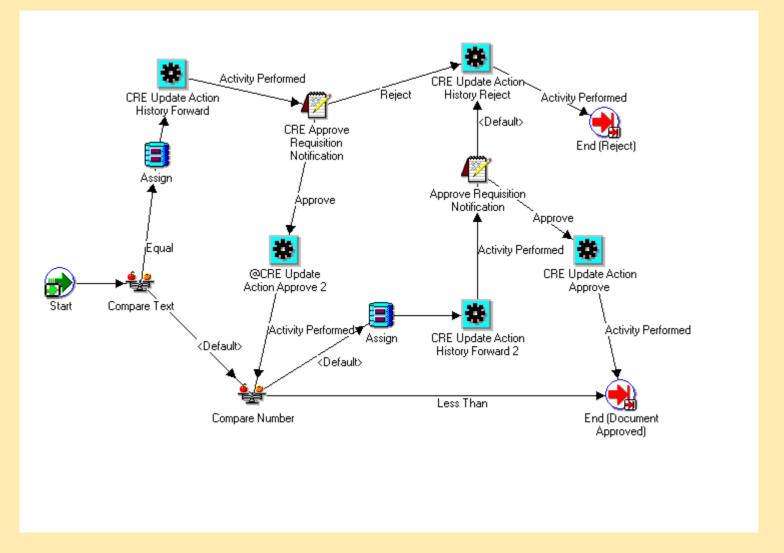# Oracle Standard Workflow Requisition Approval

Custom Workflow

Custom Workflow Process:
Details of CRE Preliminary Routing

Summary of Benefits of Case 1

1. **Allows custom routing without submitter knowing if special approval needed**

2. **Allows requisition to follow normal supervisor/hierarchy routing after special approver gives approval**

3. **Special approval information will be contained in approval history**

4. **Minimal effect on standard Workflow routing**

Case 2

- **Medium Size Property Management company (REIT)**

- **using I Procurement 11i**

- **Needs to be able to route a requisition through multiple approval hierarchies depending on the requisition:**

  - **1) a normal requisition goes through normal position hierarchy,**

  - **2) an IT expenditure goes through an IT approval hierarchy, and**

  - **3) a capital expenditure goes through a capital expenditure hierarchy.**

Approval List Selection: Standard Oracle Code

Package Body: po_approvallist_s1

Procedure: get_default_approval_list

Code:

```
l_progress := '002';
SELECT NVL(p_approval_path_id, default_approval_path_id),
forwarding_mode_code,
NVL(can_preparer_approve_flag, 'N')
INTO   l_approval_path_id,
l_forwarding_mode_code,
l_can_preparer_approve_flag
FROM   po_document_types podt
 WHERE  podt.document_type_code = p_document_type
AND    podt.document_subtype = p_document_subtype;
 l_progress := '005';
```

Approval List Selection: Custom Code

Package Body: po_approvallist_s1

Procedure: get_default_approval_list

Immediately following the code from previous slide

```
SMT_PO_REQAPPRV_PKG.get_approval_path(p_document_id,
                                      l_smt_approval_path_id,
                                      l_smt_error_code,
                        l                 _smt_error_msg);


IF l_smt_approval_path_id IS NOT NULL THEN
        l_approval_path_id := l_smt_approval_path_id;
ELSE
        NULL;
END IF;
```

Code in the routine SMT_PO_REQAPPRV.get_approval_path

--first is the logic that looks at particular requisition and determines if it needs special approval hierarchy.

-- if this requisition requires special approval hierarchy then assign that hierarchy value to the variable l_approval_path_id

```
IF (l_cap_exp_cnt > 0) THEN
    SELECT DISTINCT PER.POSITION_STRUCTURE_ID
    INTO l_approval_path_id
    FROM PER_POSITION_STRUCTURES PER
    WHERE NAME = 'Cap Ex Hierarchy';
END IF;
```

Summary of Case 2

1. **Allows custom routing without submitter knowing if special approval needed**

2. **Special IT approval created by adding a custom approval step before standard Workflow routing**

3. **Capital expenditure approval accomplished by custom change to code, that changes the position hierarchy based on item's distribution account**

4. **Special approval information will be contained in approval history**

5. **Minimal change to standard Workflow routing and to standard Oracle code**

Case 3: Large Fortune 500 Bank

- 11.03 Purchasing with Self-Service Purchasing.

- Needs to base requisition approval on the requestor, not the preparer of the requisition.

- Needs to have requisition automatically skip up to the first person in organization who has approval authority (> $0), bypassing anyone in the organization who does not have any approval authority.

- Need to escalate a requisition up the hierarchy if there is a timeout, but not allow a requisition to escalate up more than x number of levels.

(Continued on next slide)

Case 3: (Continued)

- Need to customize the timeouts of approval notifications, so that certain approvers are given longer to approve a requisition

- Need to limit total time allowed before the requisition times out (no matter how many people need to see the requisition),

- All the emails generated by requisition approvals must be tied to the Messages Form to make them easily modifiable.

- Email approvers must be able to see special information that was entered in Self-Service Purchasing (example: business card approval where business card details are entered in Self-service Purchasing) .
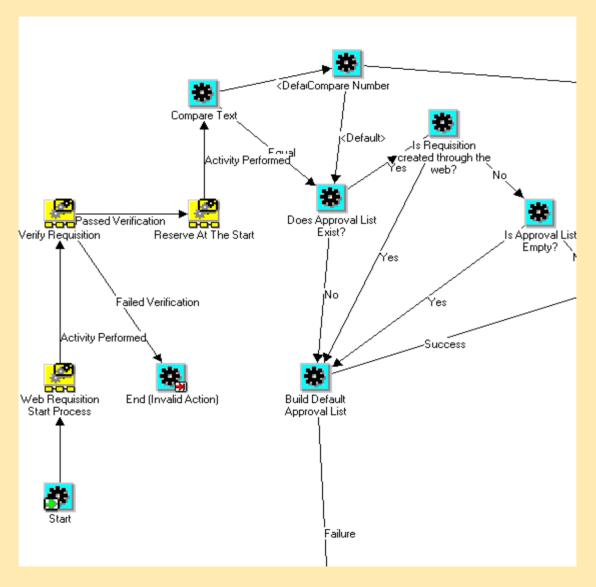
Base Approval on Requestor

- **Core apps: Need to change workflow item attributes in beginning of workflow**

- **Self-service purchasing**

  (I-Procurement): Need to change code in Oracle package por_approval_list.get_approval_list
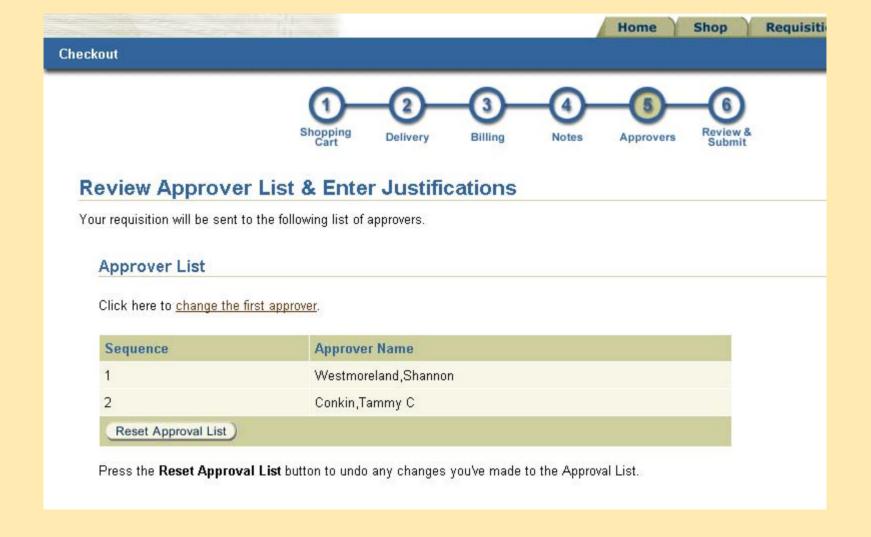
Change Workflow Item Attributes

Core Apps: Change Workflow Item Attributes to Base Approval on Requestor

- **Add a new step in workflow inside or next to Verify Requisition (near beginning of workflow)**

- **Forward From type attributes need to be changed to requestor**

    - **FORWARD_FROM_ID, FORWARD_FROM_USER_NAME, FORWARD_FROM_DISPLAY_NAME**

- **Forward To and Approver related attributes need to be changed to the first approver above requestor**

Self-Service Purchasing Approval List

Home | **Shop** | **Requisiti**

Checkout

① Shopping Cart — ② Delivery — ③ Billing — ④ Notes — ⑤ Approvers — ⑥ Review & Submit

Review Approver List & Enter Justifications

Your requisition will be sent to the following list of approvers.

Approver List

Click here to change the first approver.

Sequence	Approver Name
1	Westmoreland,Shannon
2	Conkin,Tammy C

[Reset Approval List]

Press the **Reset Approval List** button to undo any changes you've made to the Approval List.

Change for Self-Service Purchasing

- **Add a routine to get correct first approver inside por_approval_list.get_approval_list**

  - Ftu_Wf_Po_Req_Apprvl_Pkg.get_first_approver (l_requestor_id,l_first_approver_id, l_error_msg);

- **Change the variable that is being passed to po_approvallist_s1.get_default_approval_list.**

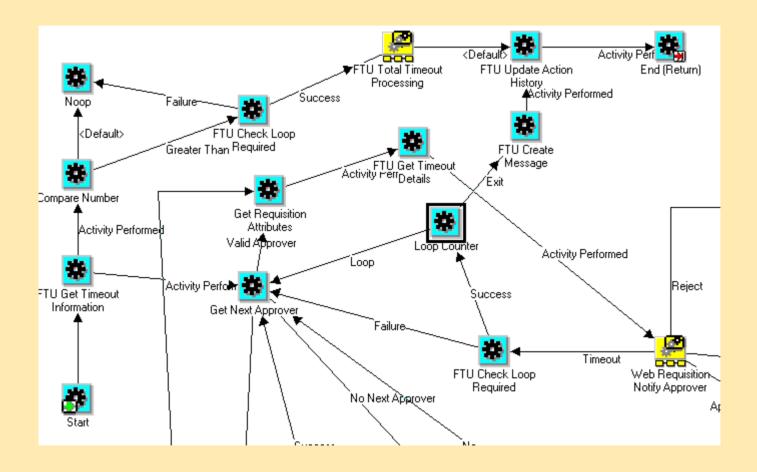 - Variable that is changed is p_first_approver_id.

  - IF (p_default_flag = 1) THEN
    l_initial_build := true;
    po_approvallist_s1.get_default_approval_list(
    p_first_approver_id=>l_first_approver_id,

Escalation After Timeouts

- **Use Loop Counter to keep track of escalation**

- **Custom code inserted to set timeout levels for each approver based on job**

- **Custom code to escalate beyond the pre-built approval list**

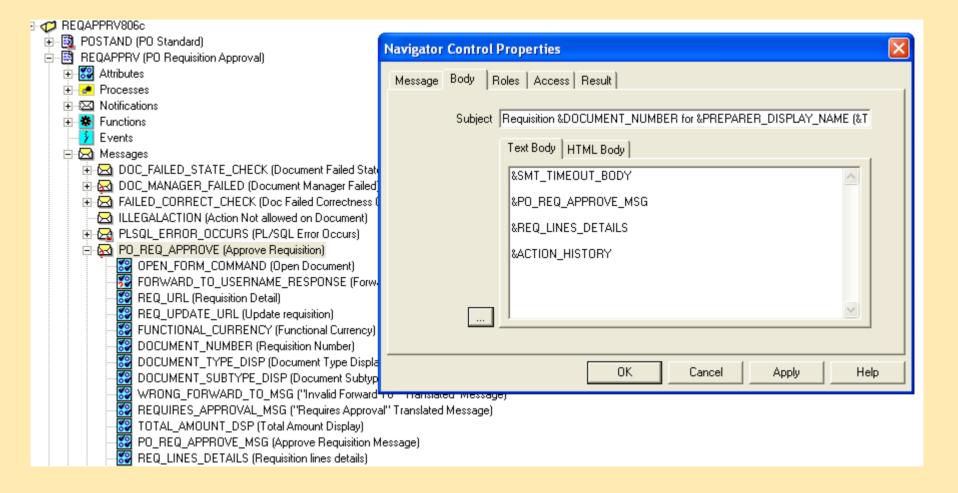- **Total timeout uses Workflow WAIT pre-defined function**

Loop Customization Example

Workflow Notifications

- **Custom notifications can include dynamic variables, such as when a notification will timeout**

- **Notifications can be tied to Messages Form**

- **HTML messages are built in a package**

- **Button messages can be modified**

- **Extra requisition detail columns can be added to notifications using AK Developer (e.g. GL Account Description, Special Information –i.e. Info Template fields)**

Adding Timeout Information to Notification

Custom Messages in Messages Form

Custom Code to Tie Message to Messages Form

```
fnd_message.set_name
      ('XBOL','SMT_TIMEOUT_BODY');
l_timeout_body := fnd_message.get;
wf_engine.SetItemAttrText
      ( itemtype   => itemType,
        itemkey    => itemkey,
        aname      => 'SMT_TIMEOUT_BODY',
        avalue     =>  l_timeout_body);
```

Custom Email with Timeout Information

Notification Details (Normal Priority)

To **Bonifield, Gregory**   Respond By **08-AUG-2002 11:17:15**

Date **08-AUG-2002 11:16:15**

Subject **Requisition 1006567 for Dimmick, Michelle Renee (495.00 USD) requires approval. THIS REQUISITION HAS TIMED OUT - PLEASE HANDLE IMMEDIATELY**
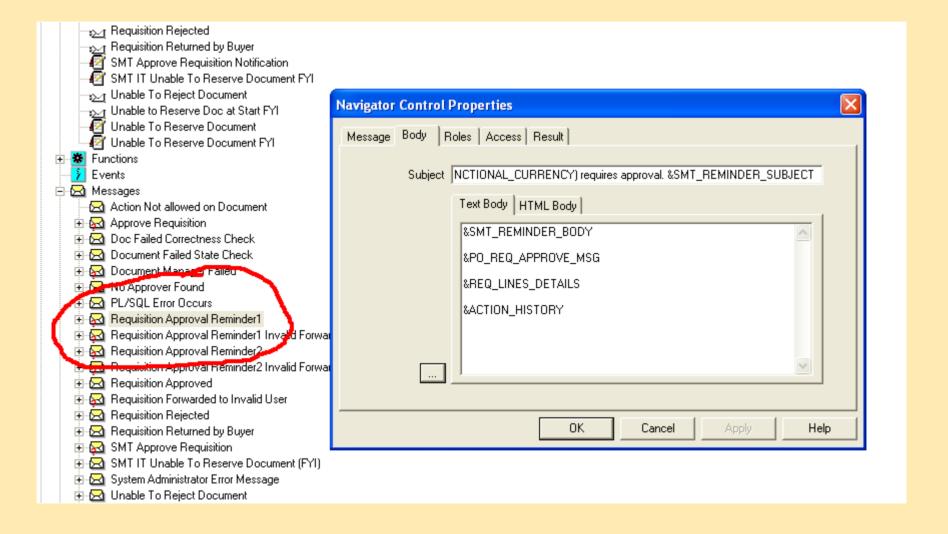
THIS REQUISITION HAS TIMED OUT. PLEASE HANDLE IMMEDIATELY

Requisition Summary

Requisition Total	495.00 USD
Description	test timeout 11 Line #1 Distribution #1 Insufficient funds (detail) Account #591.100.535.6612.000 - Office Expenses Description:Stapler - Black, desktop, holds full strips of 210 staples Distribution Amount: $495.00 Account Budget PTD: $6,250.00 Funds Available PTD: -$308.55
Forwarded From	Taylor, Lisa
Created By	Dimmick, Michelle Renee
Justification	This requisition has timed out and is being forwarded automatically to the next approver by the system.

Customizing The Workflow Reminder Message

Custom Code to Populate Messages

```
fnd_message.set_name ('XBOL','SMT_REMINDER_SUBJECT');
l_reminder_subject := fnd_message.get;


fnd_message.set_name('XBOL','SMT_REMINDER_BODY');
fnd_message.set_token('SMT_TIMEOUT2_DATE',to_char(l_timeout_date_2,
'DD-MON-YYYY HH:MI AM'));
l_reminder_body := fnd_message.get;


 wf_engine.SetItemAttrText ( itemtype   => itemType,
                             itemkey    => itemkey,
                             aname      => 'SMT_REMINDER_SUBJECT',
                             avalue     => l_reminder_subject);


wf_engine.SetItemAttrText ( itemtype   => itemType,
                            itemkey    => itemkey,
                            aname      => 'SMT_REMINDER_BODY',
                            avalue     => l_reminder_body);
```

Custom Reminder Email

From: Oracle Workflow [apdsummi@summitproperties.com]   Sent: Thu 8/8/2002
To: bcarroll@baytree.com
Cc:
Subject: First reminder: Requisition 1006516 for Dimmick, Michelle Renee (4,950.00 USD) requires approval. -

Please approve or reject this requisition. If you do not, it will be forwarded to your supervisor if you do not respond by 08-AUG-2002 01:00 PM PST.

Requisition Summary

Requisition Total	4,950.00 USD
Description	test timeout 11 Line #1 Distribution #1 Insufficient funds (detail) Account #591.100.535.6612.000 - Office Expenses Description:Stapler - Black, desktop, holds full strips of 210 staples Distribution Amount: $4,950.00 Account Budget PTD: $250.00 Funds Available PTD: $250.00
Forwarded From	Bonifield, Gregory
Created By	Dimmick, Michelle Renee
Justification	This requisition has timed out and is being forwarded automatically to the next approver by the system.

Requisition Lines

Customizing HTML Type Email Messages

- **New custom message attributes added to messages are picked up automatically by HTML attachment**

- **Changing the data inside a standard Oracle message attribute requires a change to Oracle code**
    - Package: PO_WF_REQ_NOTIFICATION
    - Procedure: get_po_req_approve_msg
    - Example next slide

Example of customizing HTML message
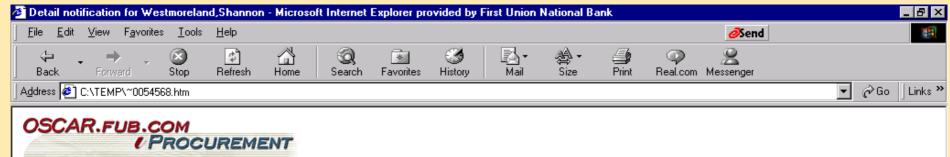## In PO_WF_REQ_NOTIFICATION. get_po_req_approve_msg

Original Oracle Code

```
l_document := l_document || '<TD class="tabledata" align=left nowrap>' ||

                    l_description || '<BR></TD></TR>' || NL;
```

Change to Oracle Code

```
l_document := l_document || '<TD class="tabledata" align=left nowrap>' ||
                    l_description ||NL||'<BR> <BR>'        ||

        substr(replace(l_online_report_text2,CHR(10),'<BR>'),1,3500)||
                    '<BR></TD></TR>' || NL;
```

File   Edit   View   Favorites   Tools   Help

Address C:\TEMP\~0054568.htm

OSCAR.FUB.COM
ℓPROCUREMENT

Requisition Detail

Number	**10200108**	Currency	**USD**
Creation Date	**10-AUG-2002**	Total	**6.34**
Status	**In Process**	Closed	**Yes**
Approver	**Westmoreland,Shannon**	Cancelled	**No**
Description	**test requisition**	Preparer	**Carroll,Bolton**
Last Update Date	**10-AUG-2002**	Note to Approver	

Line	Item Number	Description	Price	Unit of Measure	Quantity	Estimated Delivery Date	Cancelled	Requestor	Deliver-To Location	One Time Address	Shipping Method	GL Charge Account	Additional Information
1	0001000064	NON-WHS - BUSINESS CARDS - EMBOSSED - GREEN & WHITE - FIRST UNION CORPORATION - 250/BOX	6.34	BOX	1	27-AUG-2002	N	Carroll,Bolton	NCA029444	Not a dynamic location	Contractual	GL Charge Account	Additional Information

Note [   ]

User Approval Action   [Approve]   [Reject]

Questions and Answers

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