

Give your end-users an overview of their tasks

APEX World 2023

Dimitri Gielis - dgielis@united-codes.com - @dgielis - dgielis.com

United Codes - @united_codes - united-codes.com

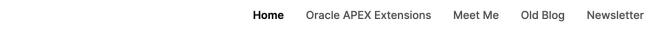


Dimitri Gielis

- Founder & CEO of **United Codes**
- 23+ years of Oracle Experience (OCP & APEX Certified)
- Oracle ACE Director
- “APEX Developer of the year 2009” by Oracle Magazine
- “Oracle Developer Choice award (ORDS)” in 2015
- Author Expert **Oracle APEX**
- Presenter at Conferences



@ D G I E L I S



Oracle APEX: the Power of the Activity Logs

Dimitri Glelis
📖 5 min read

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-  APEX Office Print
-  APEX Media Extension
-  APEX Project Eye
-  Plug-ins Pro
-  APEX Office Edit

Where are tasks involved?



Leave request



Travel request



Laptop request



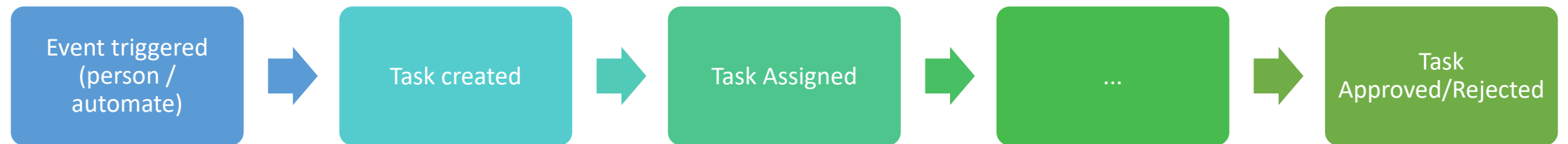
Purchase order



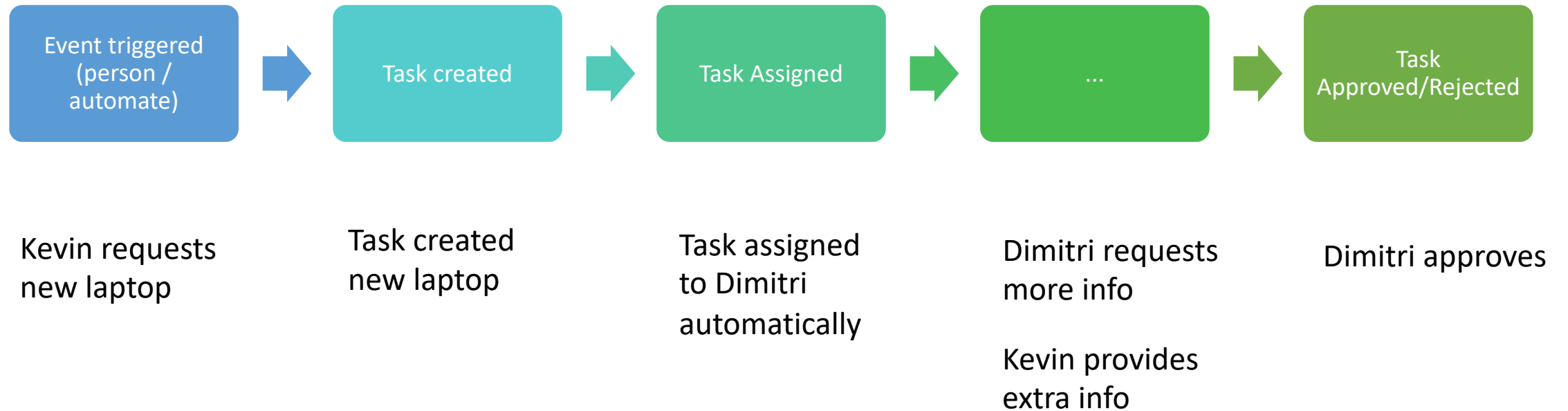
Salary change



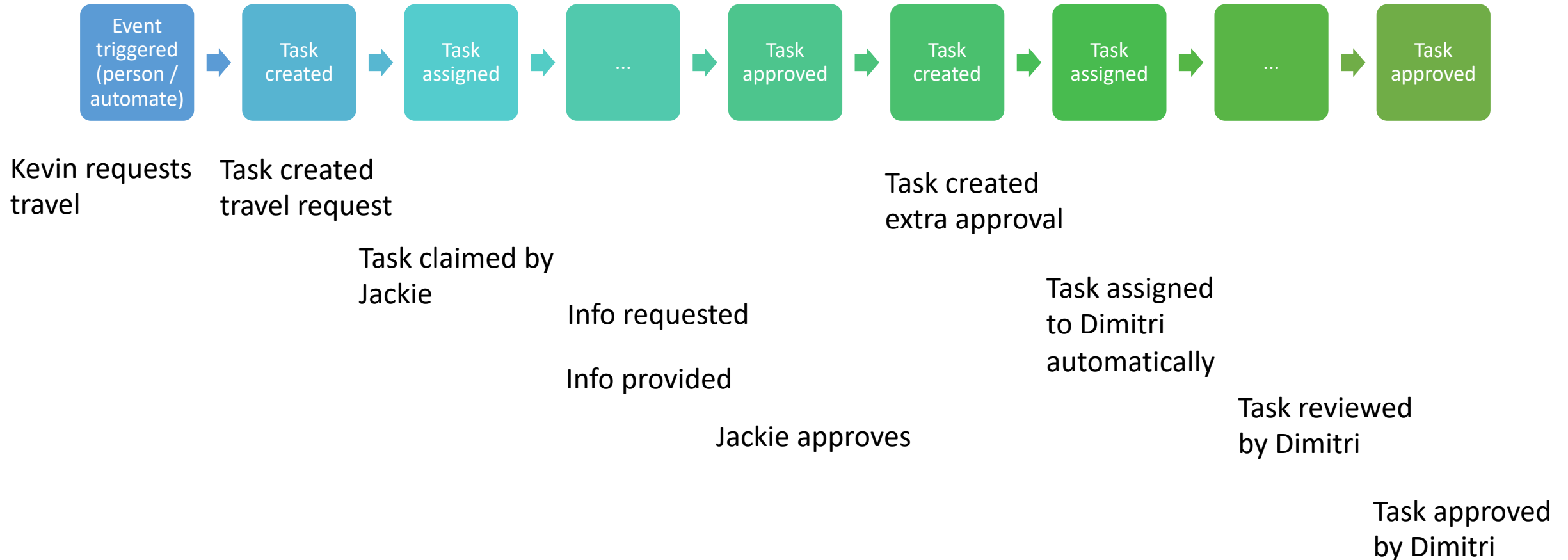
Job change



1 Level Approval



Multi-level Approval





Approvals Component

- Creates **tasks** for human approval
- Building blocks
 - Task Definition
(shared components)
 - Unified Task List
(page)
 - Task Details Page
(page)
 - Human Task - Create & Human Task – Manage
(process)
 - APEX_APPROVAL
(package)
 - APEX_TASK% & APEX_APPL_TASKDEF%
(views)
 - Archive of Purged Task Files
(monitor activity)

Shared Components > Task Definitions

 **APEX** **App Builder** ▾ SQL Workshop ▾ Team Development ▾ Gallery

Application 160 ▾ \ Shared Components ▾ \ **Task Definitions**

Task Definitions Utilization History

Name	Subject	Priority	Participants	Parameters	Actions	Last Updated By	Last Updated On
Job Change	Job Change for &INITCAP_ENAME. from &JOB. to &P_NEW_JOB.	3	4	1	3	DIMI	03/26/2023
Laptop Request	&LAPTOP_TYPE. Laptop Request for &ENAME.	3	2	0	3	DIMI	03/26/2023
Salary Change	Salary Change for &INITCAP_ENAME. from &SAL. to &P_NEW_SALARY.	3	2	1	1	DIMI	03/26/2023
Travel Request	&TRAVEL_TYPE. Travel request for &EMP_NAME.	2	1	5	3	DIMI	03/24/2023

1 - 4

Create Task Definition

Create Task Definition

*

Name

Leave Request

?

*

Subject

Request for &LEAVE_TYPE. Leave for &EMP_NAME.

?

*

Static ID

LEAVE_REQUEST

?

*

Priority

3-Medium

?

Potential Owner

?

Business Admin

?

Cancel

Create

*

Subject

Request for &LEAVE_TYPE. Leave for &EMP_NAME.

?

*

Priority

3-Medium

?

Task Details Page Number

Create Task Details Page

?

Actions Source

☒ None

☐ SQL Query

☐ Table

?

Actions Source

A task is typically associated with a system of record for which the approvals is needed (bind variable: APEX\$TASK_PK)

Actions Source

☐ None

☒ SQL Query

☐ Table

?

Actions SQL Query

↶

↷

🔍

🔧

A..

✓

1

select

ename,

job,

initcap(ename)

as

initcap_ename,

2

apex_app_setting.get_value('DEMO_NOTIFICATION_EMAIL')

as

demo_notification_email

3

from

eba_demo_appr_emp

4

where

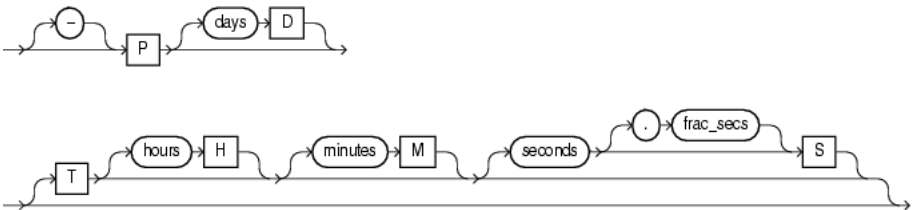
empno =

:APEX\$TASK_PK

Due On Type

Interval, SQL Query, Function Body, Expression, Scheduler Expression

Due On Type	Interval ?
Due On Interval	P1D ? In 30 Minutes, In 1 Hour, In 6 Hours, In 12 Hours, Tomorrow, Next Week
Expiration Policy	None ?



Participants

Q

Search: All Text Columns

Go

Edit

Add Row

Reset

	Participant Type	Value Type	Value
Q Click Add Row to create the first Participant.			

Participants

- Potential Owner

A user or users who can work on a task i.e Approve or Reject the task

- Business Administrator

A user or users who have administrative rights on a task

Participants

Q

Search: All Text Columns

Go

Edit

Add Row

Reset

	Participant Type	Value Type	Value
☐			
☐	Potential Owner	Static	
☒	Business Administrator		
1 rows selected			Total 2

Parameters

Static

SQL Query

Function Body

Expression

Parameters

Q

Search: All Text Columns

Go

Actions

Edit

Add Row

Reset

		Static ID	Label	Data Type	Required	Visible	Comment
Q Click Add Row to create the first Parameter.							

Parameters

These are attributes that show up by default on the task details page and contain information pertaining to the type of task

Parameters

Q

Search: All Text Columns

Go

Actions

Edit

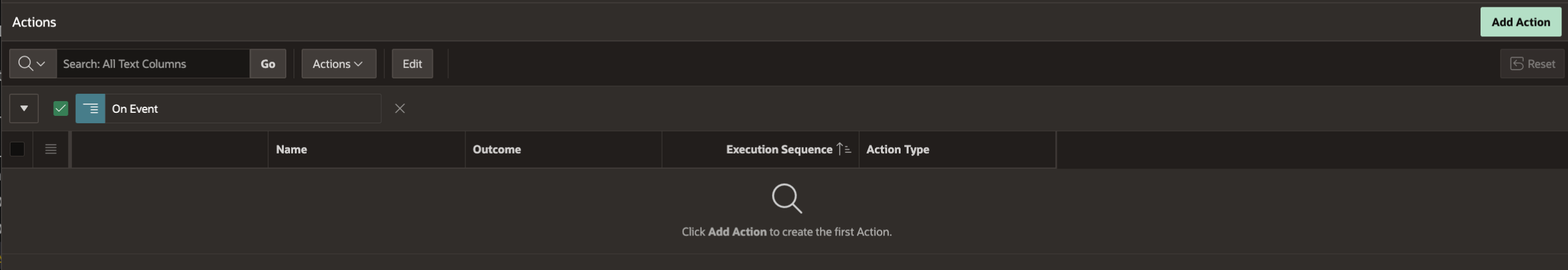
Add Row

Reset

		Static ID	Label	Data Type	Required	Visible	Comment
☒		NO_OF_DAYS	No Of Days	String	Yes	Yes	
☐		REQ_ID	Request Id	String	Yes	No	
☐		TRAVEL_COST	Travel Cost	String	Yes	Yes	
☐		TRAVEL_STATUS	Travel Status	String	Yes	Yes	
☐		TRAVEL_TYPE	Travel Type	String	Yes	Yes	

1 rows selected

Total 5

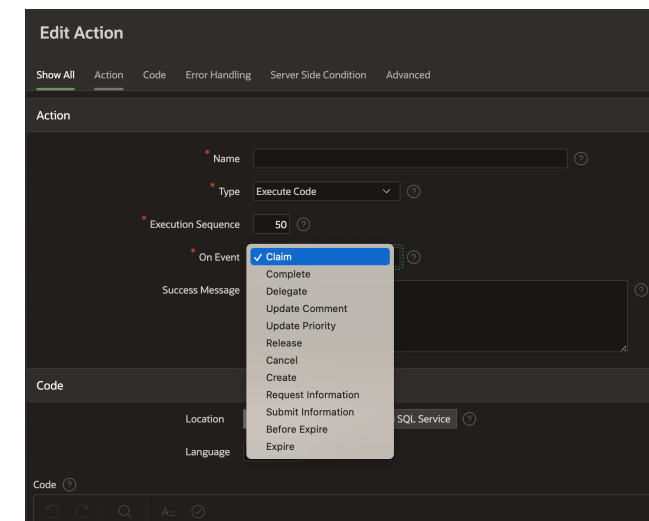


Actions

Actions can not only be defined for Approve and Reject of a task, but also *other Events* occurring on the task, like Delegate, Claim, Cancel, Release etc.

			Name	Outcome	Execution Sequence ↑	Action Type
On Event: Before Expire						
☒			Before Expire: Send Reminder Email ...		30	Send E-Mail
☐			Push Email Queue for Sample		40	Execute Code
On Event: Complete						
☐			On Complete: Update Laptop Reque...		20	Execute Code

1 rows selected Total 3



Developer comments

Comments	
Comments	xxx
Last Updated On	Last Updated By
26-MAR-23	DIMI

Edit Task

Job Change

Application 160

Shared Components

Task Definitions

Job Change

Task Definition: Job Change

Cancel

Delete

Apply Changes

Show All

Name

Settings

Deadline

Participants

Parameters

Actions

Comments

Last Updated

Name

Name

Job Change

Static ID

JOB_CHANGE

Settings

Subject

Job Change for &INITCAP_ENAME, from &JOB, to &P_NEW_JOB.

Priority

3-Medium

Task Details Page URL

/?p=&APP_ID:&SESSION:&DEBUG-RP.2:P2_TASK_ID&TASK_ID.

Actions Source

None

SQL Query

Table

Actions SQL Query

```
1 select ename, job, initcap(ename) as initcap_ename,
2      apex_app_setting.get_value('DEMO_NOTIFICATION_EMAIL') as demo_notification_email
3      from eba_demo_appr_emp where empno = :APEX$TASK_PK
```

Deadline

Due On Type

Interval

Due On Interval

P2D

In 30 Minutes, In 1 Hour, In 6 Hours, Tomorrow, Next Week

Expiration Policy

None

Participants

Search: All Text Columns

Go

Edit

Add Row

Reset

	Participant Type	Value Type	Value
☒	Potential Owner	Static	JANE
☐	Potential Owner	Static	STEVE
☐	Potential Owner	Static	BO
☐	Business Administrator	Static	PAT

1 rows selectedTotal 4

Parameters

Search: All Text Columns

Go

Actions

Edit

Add Row

Reset

	Static ID	Label	Data Type	Required	Visible	Comment
☒	P_NEW_JOB	New Job	String	Yes	Yes	

1 rows selectedTotal 1

Actions

Search: All Text Columns

Go

Actions

Edit

Add Action

Reset

On Event

		Name	Outcome	Execution Sequence	Action Type
☒	On Event: Complete	On Approve	Approved	10	Execute Code
☐		Notify Employee	Approved	20	Send E-Mail
☐		Push Email Queue for Sample	Approved	30	Execute Code

1 rows selectedTotal 3

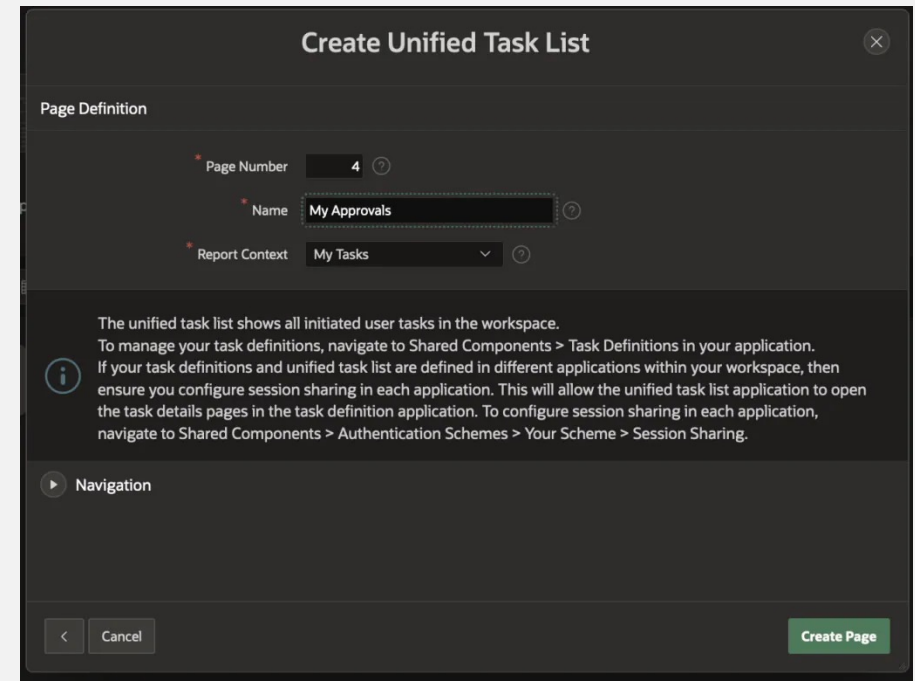
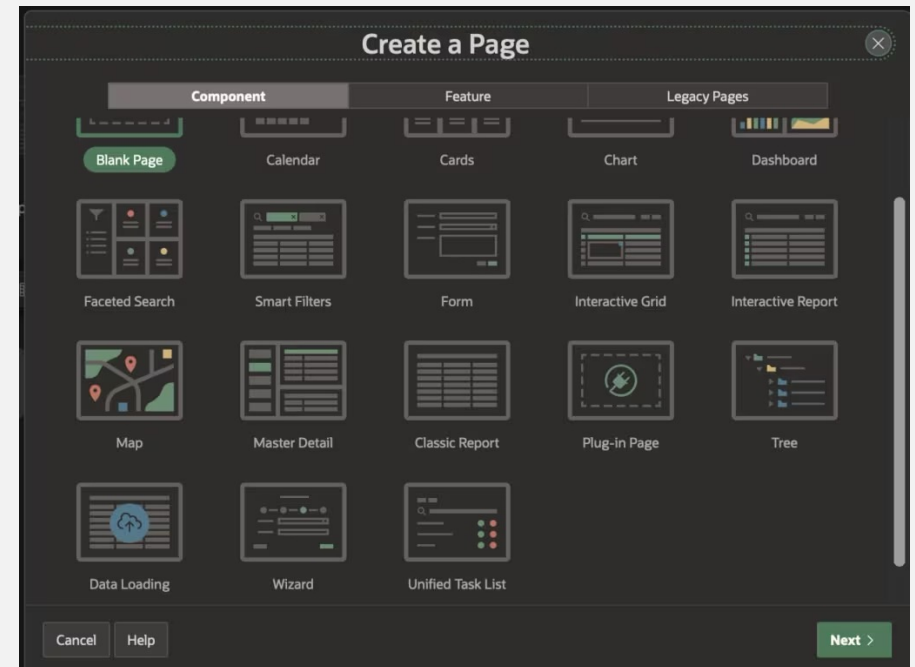
Comments

Unified Task List

The Unified Task List allows users to view, action, or edit task instances.

- You have different **Report Contexts** to choose from:
 - Initiated by Me (initiator)
 - My Tasks (potential / actual owner)
 - Admin Tasks (business owners)

Create Unified Task List



Example

Initiated by me

Search...

⌵ Due Date

☒ Show expired tasks

Salary Change for Adams from 1100 to 1200

Salary Change · Assigned to bo · Due 6 days ago · Urgent

MacBook Pro Laptop Request for ALLEN

Laptop Request · Assigned to jane · Due 3 days ago

Expired

Lenovo T490 Laptop Request for BLAKE

Laptop Request · Assigned to jane · Due 3 days ago

Expired

Lenovo T490 Laptop Request for BLAKE

Laptop Request · Assigned to steve · Due 3 days ago

Expired

MacBook Pro Laptop Request for ALLEN

Laptop Request · Assigned to steve · Due 3 days ago

Expired

MacBook Pro Laptop Request for ALLEN

Laptop Request · Assigned to bo · Due 3 days ago

Expired

Lenovo T490 Laptop Request for BLAKE

Laptop Request · Assigned to bo · Due 3 days ago

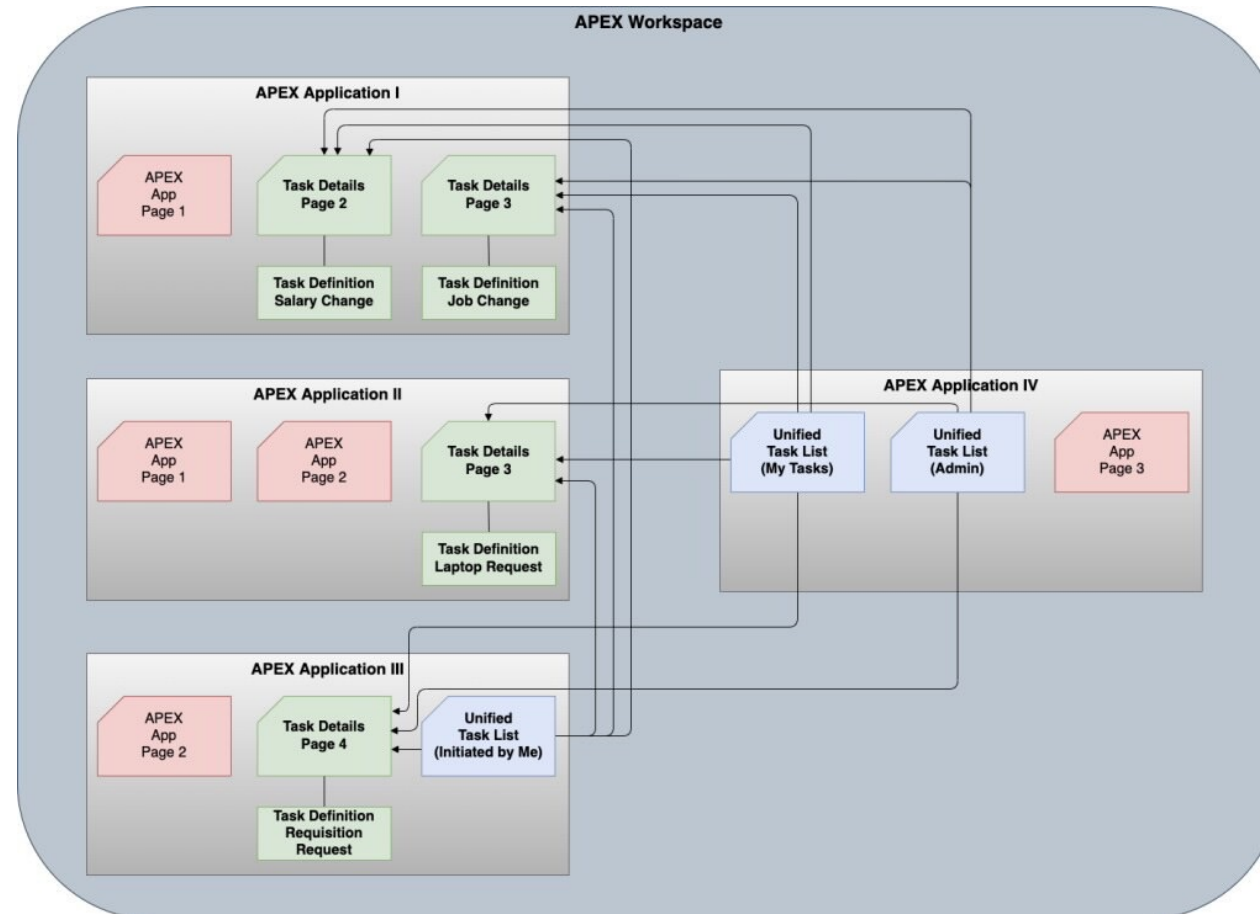
Expired

Job Change for Adams from CLERK to PRESIDENT

Job Change · Due 45 hours ago

Unassigned

Unified Task List with different Applications



100% customizable

Breadcrumb Bar

Breadcrumb

Search Field and Smart Filters

Initiated by Me - Smart Filters

Filters

Body

P23_SEARCH

P23_DUE

P23_TYPE

P23_PRIORITY

P23_STATE

P23_OUTCOME

P23_APPLICATION

P23_INITIATOR

P23_INITIATED

P23_TASK_ID

Initiated by Me - Report

Actions

Dynamic Actions

Sort Order

P23_SORT_BY

P23_SHOW_EXPIRED

Unified Task List

Due Overdue

X

Due Date

Show expired tasks

Salary Change for Adams from 1100 to 1200

Salary Change · Initiated by dimi · Due 6 days ago · Urgent

Approve

Reject

MacBook Pro Laptop Request for ALLEN

Laptop Request · Initiated by dimi · Due 4 days ago

Expired

Approve

Reject

Lenovo T490 Laptop Request for BLAKE

Laptop Request · Initiated by dimi · Due 4 days ago

Expired

Approve

Reject

When selecting a Task in the
Unified Task List ...

Task Details Page

Basic details of the task

- Priority
- Task parameters
- Comments
- History of the task operations

Buttons to manage the task

- Approve, Reject , Claim, Delegate, Comment, set Priority on the task etc depending on the user accessing the task (authorization)

Task Definition: Leave Request

Cancel Delete Apply Changes

Show All Name Settings Participants Parameters Actions Comments Last Updated

?

* Priority 2-High ?

Due On Interval ?

In 30 Minutes, In 1 Hour, In 6 Hours, In 12 Hours, Tomorrow, Next Week

Task Details Page Number Create Task Details Page ?

You have not specified a page number.
Should we use the next available page
number?

Cancel OK

Create
Task Details Page

Example

Initiated by me

Q

Search...

↓ ⌵ Due Date

▼

Salary Change for Adams from 1100 to 1200

Salary Change · Assigned to bo · Due 6 days ago · Urgent

MacBook Pro Laptop Request for ALLEN

Laptop Request · Assigned to jane · Due 3 days ago

Lenovo T490 Laptop Request for BLAKE

Laptop Request · Assigned to jane · Due 3 days ago

Lenovo T490 Laptop Request for BLAKE

Laptop Request · Assigned to steve · Due 3 days ago

MacBook Pro Laptop Request for ALLEN

Laptop Request · Assigned to steve · Due 3 days ago

MacBook Pro Laptop Request for ALLEN

Laptop Request · Assigned to bo · Due 3 days ago

Lenovo T490 Laptop Request for BLAKE

Laptop Request · Assigned to bo · Due 3 days ago

Job Change for Adams from CLERK to PRESIDENT

Job Change · Due 45 hours ago

Salary Change Details

Salary Change for Adams from 1100 to 1200

Assigned to BO, Priority 1, Initiated by DIMI

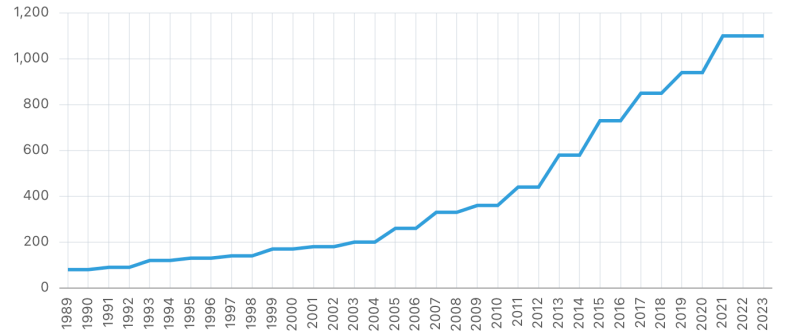
+9.1%

Percent Change

Change Priority

Cancel Task

Salary History



Comments

DI

test

dimi · 13 days ago

DI

x

dimi · 13 days ago

Comment

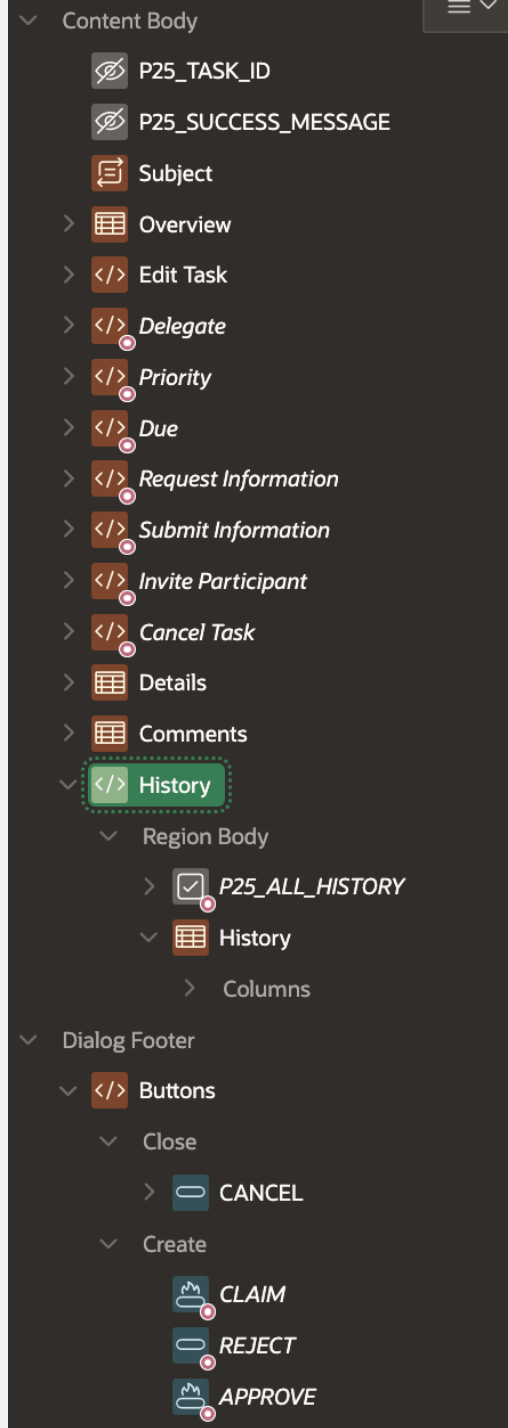
Add Comment

▼ History

Event	Time	User	Message
Create	13 days ago	dimi	Task created with ID 56400528914510422
Update Comment	13 days ago	dimi	Add comment: test
Update Comment	13 days ago	dimi	Add comment: x
Update Priority	4 days ago	dimi	Set task priority to 1

Cancel

100%
customizable



Task Details

Job Change for Adams from CLERK to PRESIDENT

Unassigned

Type	Job Change
Initiated	4 days ago
Initiator	dimi
Owner	
Priority	Medium
Due	2 days ago
Outcome	

Change Priority

Cancel Task

Details

New Job

PRESIDENT

Comments

Comment

Add Comment

History

Event	Time	User	Message
Create	4 days ago	dimi	Task created with ID 68950668241506014

Human Task - Create & Human Task – Manage

The screenshot shows the APEX App Builder interface for configuring a Human Task. The top navigation bar includes 'APEX', 'App Builder', 'SQL Workshop', 'Team Development', and 'Gallery'. The main workspace is titled 'Application 160 \ Page Designer'. On the left, a tree view shows the process flow: 'After Submit' (with a menu icon), 'Validating' (with a sub-item 'Validations' containing 'Ensure at Least One Admin' and 'Ensure at Least One Approver'), 'Processing' (with a sub-item 'Processes' containing 'Process form Request Salary Change' and 'Submit Task'), and 'Parameters' (with 'Proposed Salary'). The 'Submit Task' process is selected and highlighted in green. The main area displays the 'Subject' field with a description: 'The Task Subject which summarizes the purpose of the task. This field can be used to override the subject of the task specified at the task definition level.' Below this is the 'Additional Information' section, which includes 'Type: Text' and 'Supported Substitutions: Application, Page Items and System Variables'. The right sidebar shows the 'Process' configuration for 'Submit Task'. It includes a search bar, a 'Filter' button, and sections for 'Identification' (Name: 'Submit Task', Type: 'Human Task - Create', Editable Region: '- Select -'), 'Settings' (Definition: 'Salary Change', Subject, Priority, Initiator Item, Task ID Item, Details Primary Key Item: 'P4_EMPNO'), and 'Execution' (Sequence: '20', Point: 'Processing', Run Process: 'Once Per Page Visit (default)').

This screenshot shows the same APEX App Builder interface as the previous one, but with a dropdown menu open for the 'Type' field in the 'Settings' section. The dropdown menu lists several options: 'Approve' (selected with a checkmark), 'Reject', 'Comment', 'Claim', 'Delegate', 'Release', 'Cancel', 'Invite Participant', 'Set Priority', 'Request Information', 'Submit Information', 'Set Due Date', and 'Renew'. The 'Task ID Item' field is also visible, showing a red 'x' icon. The 'Execution' section shows 'Sequence' as '20', 'Point' as 'Processing', and 'Run Process' as 'Once Per Page Visit (default)'. The 'Success Message' section is partially visible at the bottom.

PL/SQL API

```
APEX_APPROVAL.CREATE_TASK(  
    p_application_id      IN NUMBER                DEFAULT wwv_flow.g_flow_id,  
    p_task_def_static_id  IN VARCHAR2,  
    p_subject             IN VARCHAR2              DEFAULT NULL,  
    p_parameters          IN t_task_parameters     DEFAULT c_empty_task_parameters,  
    p_priority            IN INTEGER                DEFAULT NULL,  
    p_initiator           IN VARCHAR2              DEFAULT NULL,  
    p_detail_pk           IN VARCHAR2              DEFAULT NULL)  
return number;  
  
apex_approval.approve_task(  
    p_task_id => 1234);  
  
apex_approval.renew_task(  
    p_task_id  => 1234,  
    p_priority => apex_approval.c_task_priority_high,  
    p_due_date => sysdate+10);
```

https://docs.oracle.com/en/database/oracle/apex/22.2/aeapi/APEX_APPROVAL.html

6 APEX_APPROVAL

The APEX_APPROVAL package provides APIs for the management of approvals and Human Tasks. This package includes functionality to create new Human Tasks for a user to approve as well as operations dealing with the lifecycle management and state handling of Human Tasks. This package is part of the Oracle APEX Workflow functionality.

[ADD_TASK_COMMENT Procedure](#)

[ADD_TASK_POTENTIAL_OWNER Procedure](#)

[ADD_TO_HISTORY Procedure](#)

[APPROVE_TASK Procedure](#)

[CANCEL_TASK Procedure](#)

[CLAIM_TASK Procedure](#)

[COMPLETE_TASK Procedure](#)

[CREATE_TASK Function](#)

[DELEGATE_TASK Procedure](#)

[GET_LOV_PRIORITY Function](#)

[GET_LOV_STATE Function](#)

[GET_TASK_DELEGATES Function](#)

[GET_TASK_HISTORY Function](#)

[GET_TASK_PARAMETER_VALUE Function](#)

[GET_TASK_PRIORITIES Function](#)

[GET_TASKS Function](#)

[HANDLE_TASK_DEADLINES Procedure](#)

[IS_ALLOWED Function](#)

[IS_BUSINESS_ADMIN Function](#)

[IS_OF_PARTICIPANT_TYPE Function](#)

[REJECT_TASK Procedure](#)

[RELEASE_TASK Procedure](#)

[RENEW_TASK Function](#)

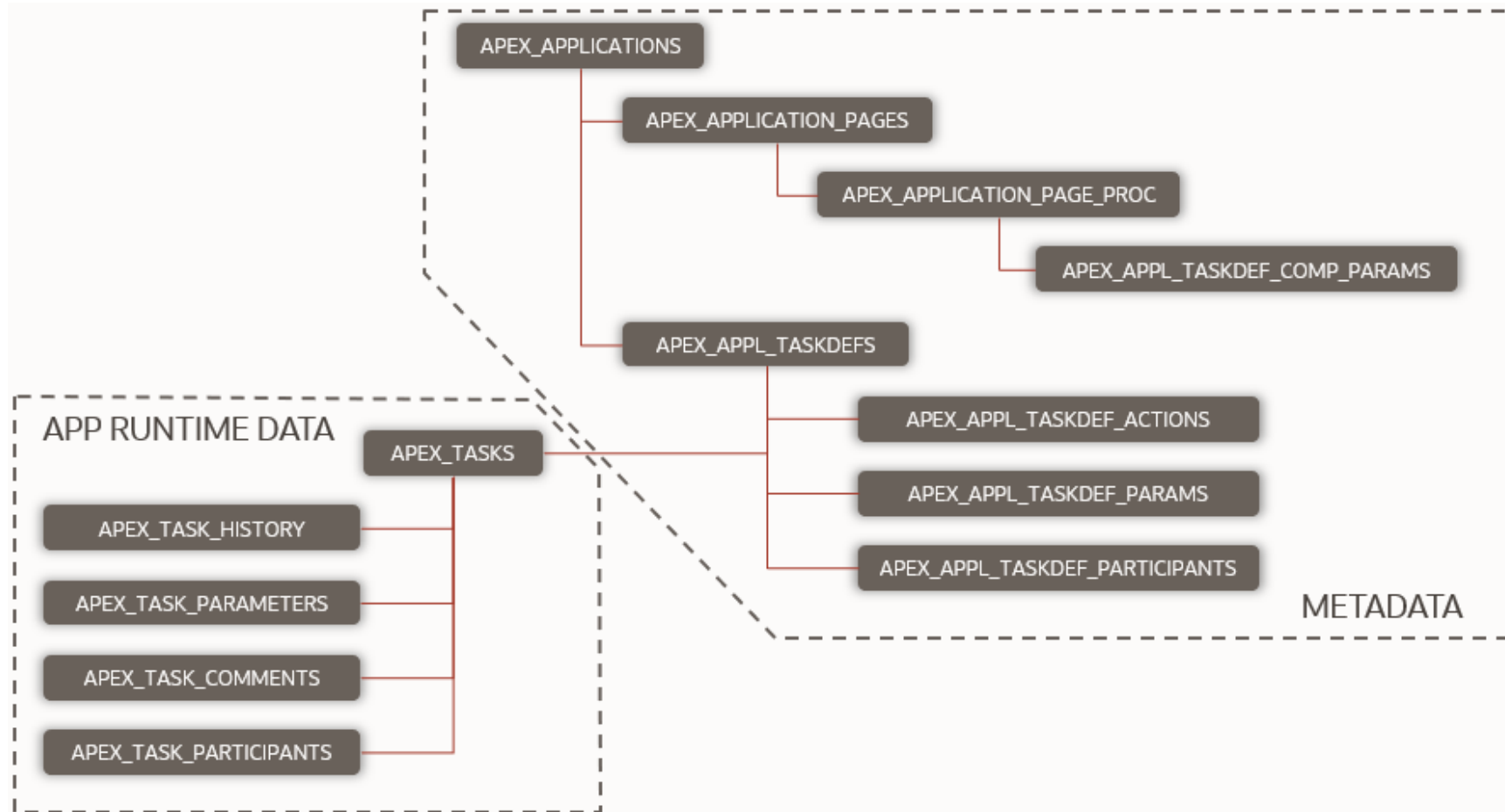
[REQUEST_MORE_INFORMATION Procedure](#)

[SET_TASK_DUE Procedure](#)

[SET_TASK_PRIORITY Procedure](#)

[SUBMIT_INFORMATION Procedure](#)

APEX Views



Task Retention and Task Purging

 **APEX** App Builder ▾ SQL Workshop ▾ Team Development ▾ Gallery

Q Search

   **dimi**
p_dimi

 Monitor Activity \ Archive of Purged Task Files

Purged Task Files

Q ▾

Go

Actions ▾

Delete All

Delete Checked

Reset

Download Zip



No Tasks have been purged yet for this workspace.

Archive of Purged Task Files

Purged Tasks Files contain all completed, cancelled and errored tasks across the workspace archived in the form of JSON.

Use this page to download and delete the purged tasks files.

Demo

Creating and customizing
an Approval App



Under the covers

Datamodel

TASK_DEF_PARTICIPANTS

TASKS\$

TASK_DEFS

TASK_DEF_PARAM

TASK_DEF_COMP_PARAM

TASK_DEF_ACTIONS

APEX_220200.WWV_FLOW_TASKS\$	
P * ID	NUMBER
F * FLOW_ID	NUMBER
F * SECURITY_GROUP_ID	NUMBER
F TASK_DEF_ID	NUMBER
F PREVIOUS_TASK_ID	NUMBER
SUBJECT	VARCHAR2 (1000 BYTE)
PAYLOAD	CLOB
DETAIL_PK	VARCHAR2 (400 BYTE)
* PRIORITY	NUMBER (1)
INITIATOR	VARCHAR2 (255 BYTE)
ACTUAL_OWNER	VARCHAR2 (255 BYTE)
PREVIOUS_OWNER	VARCHAR2 (255 BYTE)
DUE_ON	TIMESTAMP WITH TIME ZONE
OUTCOME	VARCHAR2 (32 BYTE)
RENEWAL_COUNT	NUMBER
* STATE	VARCHAR2 (32 BYTE)
CREATED_BY	VARCHAR2 (255 BYTE)
* CREATED_ON	TIMESTAMP WITH TIME ZONE
LAST_UPDATED_BY	VARCHAR2 (255 BYTE)
LAST_UPDATED_ON	TIMESTAMP WITH TIME ZONE
PARTICIPANTS	CLOB
COMMENTS	CLOB
HISTORY	CLOB
WWV_TASK_PK (ID)	
WWV_TASK_SGID_FK (SECURITY_GROUP_ID)	
WWV_TASK_TASKDEF_FK (TASK_DEF_ID)	
WWV_TASK_ACTUAL_OWNER_SECURITY_GROUP_ID (STATE, ACTUAL_OWNER)	
WWV_TASK_OTPKTID (DETAIL_PK, TASK_DEF_ID)	
WWV_TASK_DUEON_IX (STATE, SYS_EXTRACT_UTC("DUE_ON"))	
WWV_TASK_FLOWID (FLOW_ID)	
WWV_TASK_PK (ID)	
WWV_TASK_SRCTASKID_FK (PREVIOUS_TASK_ID)	
WWV_TASK_TIDID (TASK_DEF_ID)	

APEX_220200.WWV_FLOW_TASK_DEF_PARTICIPANTS	
P * ID	NUMBER
F * SECURITY_GROUP_ID	NUMBER
F * FLOW_ID	NUMBER
F * TASK_DEF_ID	NUMBER
* PARTICIPANT_TYPE	VARCHAR2 (15 BYTE)
IDENTITY_TYPE	VARCHAR2 (5 BYTE)
* VALUE_TYPE	VARCHAR2 (13 BYTE)
VALUE_LANGUAGE	VARCHAR2 (10 BYTE)
VALUE	VARCHAR2 (4000 BYTE)
CREATED_BY	VARCHAR2 (255 BYTE)
CREATED_ON	DATE
LAST_UPDATED_BY	VARCHAR2 (255 BYTE)
LAST_UPDATED_ON	DATE
WWV_TASK_DEF_PART_PK (ID)	
WWV_TASK_DEF_PART_FLOW_FK (FLOW_ID)	
WWV_TASK_DEF_PART_PARENT_FK (TASK_DEF_ID)	
WWV_TASK_DEF_PART_SG_FK (SECURITY_GROUP_ID)	
WWV_TASK_DEF_PART_FLOWID_FK (FLOW_ID)	
WWV_TASK_DEF_PART_PK (ID)	
WWV_TASK_DEF_PART_SGID_FK (SECURITY_GROUP_ID)	
WWV_TASK_DEF_PART_TIDID_FK (TASK_DEF_ID)	

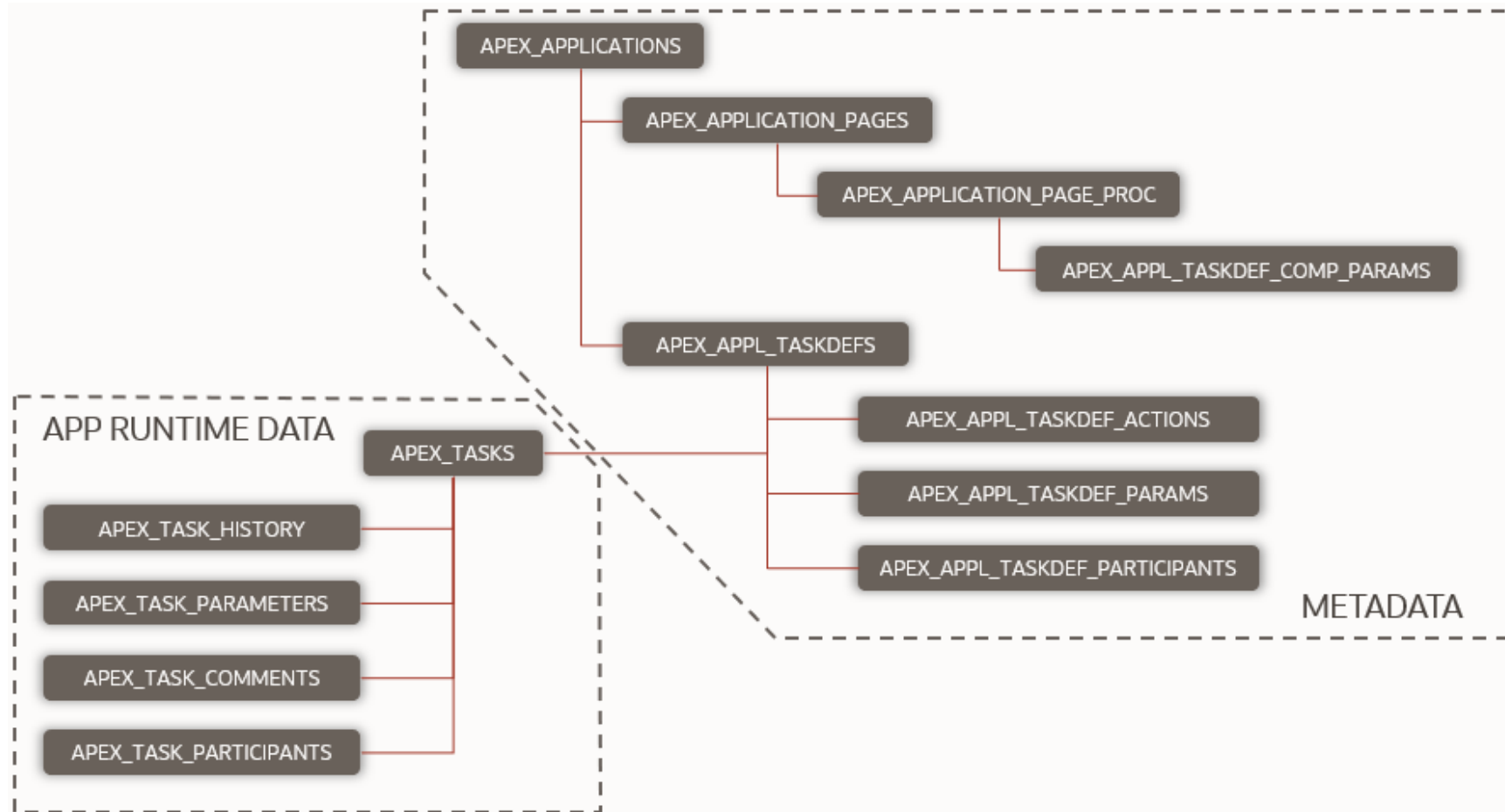
APEX_220200.WWV_FLOW_TASK_DEF_ACTIONS	
P * ID	NUMBER
UF * FLOW_ID	NUMBER
F * SECURITY_GROUP_ID	NUMBER
UF * TASK_DEF_ID	NUMBER
U * NAME	VARCHAR2 (255 BYTE)
OUTCOME	VARCHAR2 (8 BYTE)
BEFORE_EXPIRE_INTERVAL	VARCHAR2 (4000 BYTE)
* ON_EVENT	VARCHAR2 (15 BYTE)
* EXECUTION_SEQUENCE	NUMBER
* ACTION_TYPE	VARCHAR2 (255 BYTE)
ACTION_CLOB	CLOB
ACTION_CLOB_LANGUAGE	VARCHAR2 (10 BYTE)
ATTRIBUTE_01	VARCHAR2 (4000 BYTE)
ATTRIBUTE_02	VARCHAR2 (4000 BYTE)
ATTRIBUTE_03	VARCHAR2 (4000 BYTE)
ATTRIBUTE_04	VARCHAR2 (4000 BYTE)
ATTRIBUTE_05	VARCHAR2 (4000 BYTE)
ATTRIBUTE_06	VARCHAR2 (4000 BYTE)
ATTRIBUTE_07	VARCHAR2 (4000 BYTE)
ATTRIBUTE_08	VARCHAR2 (4000 BYTE)
ATTRIBUTE_09	VARCHAR2 (4000 BYTE)
ATTRIBUTE_10	VARCHAR2 (4000 BYTE)
ATTRIBUTE_11	VARCHAR2 (4000 BYTE)
ATTRIBUTE_12	VARCHAR2 (4000 BYTE)
ATTRIBUTE_13	VARCHAR2 (4000 BYTE)
ATTRIBUTE_14	VARCHAR2 (4000 BYTE)
ATTRIBUTE_15	VARCHAR2 (4000 BYTE)
LOCATION	VARCHAR2 (10 BYTE)
REMOTE_SERVER_ID	NUMBER
F WEB_SRC_MODULE_ID	NUMBER
F WEB_SRC_OPERATION_ID	NUMBER
F EMAIL_TEMPLATE_ID	CASE WHEN ('ACTION_TYPE'='NATIVE_SEND_EMAIL' AND 'ATTRIBU
SUCCESS_MESSAGE	VARCHAR2 (4000 BYTE)
ERROR_MESSAGE	VARCHAR2 (4000 BYTE)
* STOP_EXECUTION_ON_ERROR	VARCHAR2 (1 BYTE)
LOG_MESSAGE_TYPE	VARCHAR2 (7 BYTE)
CONDITION_TYPE	VARCHAR2 (255 BYTE)
CONDITION_EXPR1	VARCHAR2 (4000 BYTE)
CONDITION_EXPR2	VARCHAR2 (4000 BYTE)
BUILD_OPTION_ID	NUMBER
ACTION_COMMENT	VARCHAR2 (4000 BYTE)
CREATED_BY	VARCHAR2 (255 BYTE)
CREATED_ON	DATE
LAST_UPDATED_BY	VARCHAR2 (255 BYTE)
LAST_UPDATED_ON	DATE
WWV_TASK_DEF_ACT_PK (ID)	
WWV_TASK_DEF_ACT_UK (FLOW_ID, TASK_DEF_ID, NAME)	
WWV_TASK_DEF_ACT_EMAIL_FK (EMAIL_TEMPLATE_ID)	
WWV_TASK_DEF_ACT_FLOW_FK (FLOW_ID)	
WWV_TASK_DEF_ACT_OP_FK (WEB_SRC_OPERATION_ID)	
WWV_TASK_DEF_ACT_PARENT_FK (TASK_DEF_ID)	
WWV_TASK_DEF_ACT_RS_FK (REMOTE_SERVER_ID)	
WWV_TASK_DEF_ACT_SGID_FK (SECURITY_GROUP_ID)	
WWV_TASK_DEF_ACT_WS_MOD_FK (WEB_SRC_MODULE_ID)	
WWV_TASK_DEF_ACT_ETL_FK (EMAIL_TEMPLATE_ID)	
WWV_TASK_DEF_ACT_PARENT_FK (TASK_DEF_ID)	
WWV_TASK_DEF_ACT_PK (ID)	
WWV_TASK_DEF_ACT_RS_FK (REMOTE_SERVER_ID)	
WWV_TASK_DEF_ACT_SGID_FK (SECURITY_GROUP_ID)	
WWV_TASK_DEF_ACT_UK (FLOW_ID, TASK_DEF_ID, NAME)	
WWV_TASK_DEF_ACT_WS_MOD_FK (WEB_SRC_MODULE_ID)	
WWV_TASK_DEF_ACT_WS_OPS_FK (WEB_SRC_OPERATION_ID)	

APEX_220200.WWV_FLOW_TASK_DEFS	
P * ID	NUMBER
UF * FLOW_ID	NUMBER
F * SECURITY_GROUP_ID	NUMBER
U * NAME	VARCHAR2 (255 BYTE)
* STATIC_ID	VARCHAR2 (1000 BYTE)
* SUBJECT	VARCHAR2 (255 BYTE)
* PRIORITY	NUMBER (1)
EXPIRATION_POLICY	VARCHAR2 (6 BYTE)
MAX_RENEWAL_COUNT	NUMBER (2)
DUE_ON_INTERVAL	VARCHAR2 (4000 BYTE)
DUE_ON_TYPE	VARCHAR2 (20 BYTE)
DUE_ON_LANGUAGE	VARCHAR2 (10 BYTE)
DETAILS_LINK_TARGET	VARCHAR2 (4000 BYTE)
ACTIONS_SQL_QUERY	VARCHAR2 (4000 BYTE)
ACTIONS_TABLE_OWNER	VARCHAR2 (128 BYTE)
ACTIONS_TABLE_NAME	VARCHAR2 (128 BYTE)
ACTIONS_PK_COLUMN_NAME	VARCHAR2 (128 BYTE)
TASK_DEF_COMMENT	VARCHAR2 (4000 BYTE)
CREATED_BY	VARCHAR2 (255 BYTE)
CREATED_ON	DATE
LAST_UPDATED_BY	VARCHAR2 (255 BYTE)
LAST_UPDATED_ON	DATE
WWV_TASK_DEF_NAME_UK (FLOW_ID, NAME)	
WWV_TASK_DEF_PK (ID)	
WWV_TASK_DEF_STATIC_ID_UK (FLOW_ID, STATIC_ID)	
WWV_TASK_DEF_FLOW_FK (FLOW_ID)	
WWV_TASK_DEF_SGID_FK (SECURITY_GROUP_ID)	
WWV_TASK_DEF_DUE_IX (DUE_ON_INTERVAL, EXPIRATION_POLICY)	
WWV_TASK_DEF_NAME_UK (FLOW_ID, NAME)	
WWV_TASK_DEF_PK (ID)	
WWV_TASK_DEF_SGID_FK (SECURITY_GROUP_ID)	
WWV_TASK_DEF_STATIC_ID_UK (FLOW_ID, STATIC_ID)	

APEX_220200.WWV_FLOW_TASK_DEF_COMP_PARAMS	
P * ID	NUMBER
F * SECURITY_GROUP_ID	NUMBER
F * FLOW_ID	NUMBER
F * PAGE_ID	NUMBER
F * TASK_DEF_PARAM_ID	NUMBER
F * PAGE_PROCESS_ID	NUMBER
F * APP_PROCESS_ID	NUMBER
F * AUTOMATION_ACTION_ID	NUMBER
F * TASK_DEF_ACTION_ID	NUMBER
* VALUE_TYPE	VARCHAR2 (13 BYTE)
VALUE_LANGUAGE	VARCHAR2 (10 BYTE)
VALUE	VARCHAR2 (4000 BYTE)
CREATED_BY	VARCHAR2 (255 BYTE)
CREATED_ON	DATE
LAST_UPDATED_BY	VARCHAR2 (255 BYTE)
LAST_UPDATED_ON	DATE
WWV_TASK_DEF_COMP_PARAM_PK (ID)	
WWV_TASK_DEF_COMP_PARAM_ACTID_FK (TASK_DEF_ACTION_ID)	
WWV_TASK_DEF_COMP_PARAM_AMID_FK (AUTOMATION_ACTION_ID)	
WWV_TASK_DEF_COMP_PARAM_APID_FK (APP_PROCESS_ID)	
WWV_TASK_DEF_COMP_PARAM_FLOW_FK (FLOW_ID)	
WWV_TASK_DEF_COMP_PARAM_PROCID_FK (PAGE_PROCESS_ID)	
WWV_TASK_DEF_COMP_PARAM_SGID_FK (SECURITY_GROUP_ID)	
WWV_TASK_DEF_COMP_PARAM_TIDID_FK (TASK_DEF_PARAM_ID)	
WWV_TASK_DEF_COMP_PARAM_ACTID_FK (TASK_DEF_ACTION_ID)	
WWV_TASK_DEF_COMP_PARAM_AID_FK (APP_PROCESS_ID)	
WWV_TASK_DEF_COMP_PARAM_AMID_FK (AUTOMATION_ACTION_ID)	
WWV_TASK_DEF_COMP_PARAM_PJ_IX (FLOW_ID, PAGE_ID)	
WWV_TASK_DEF_COMP_PARAM_PID_FK (PAGE_PROCESS_ID)	
WWV_TASK_DEF_COMP_PARAM_PK (ID)	
WWV_TASK_DEF_COMP_PARAM_SGID_FK (SECURITY_GROUP_ID)	
WWV_TASK_DEF_COMP_PARAM_TPAR_FK (TASK_DEF_PARAM_ID)	

APEX_220200.WWV_FLOW_TASK_DEF_PARAMS	
P * ID	NUMBER
F * FLOW_ID	NUMBER
F * SECURITY_GROUP_ID	NUMBER
UF * TASK_DEF_ID	NUMBER
U * STATIC_ID	VARCHAR2 (255 BYTE)
* LABEL	VARCHAR2 (255 BYTE)
* DATA_TYPE	VARCHAR2 (8 BYTE)
* IS_REQUIRED	VARCHAR2 (1 BYTE)
* IS_VISIBLE	VARCHAR2 (1 BYTE)
PARAM_COMMENT	VARCHAR2 (4000 BYTE)
CREATED_BY	VARCHAR2 (255 BYTE)
CREATED_ON	DATE
LAST_UPDATED_BY	VARCHAR2 (255 BYTE)
LAST_UPDATED_ON	DATE
WWV_TASK_DEF_PARAM_PK (ID)	
WWV_TASK_DEF_PARAM_UK (TASK_DEF_ID, STATIC_ID)	
WWV_TASK_DEF_PARAM_FLOW_FK (FLOW_ID)	
WWV_TASK_DEF_PARAM_SGID_FK (SECURITY_GROUP_ID)	
WWV_TASK_DEF_PARAM_TIDID_FK (TASK_DEF_ID)	
WWV_TASK_DEF_PARAMS_FLOWID_FK (FLOW_ID)	
WWV_TASK_DEF_PARAMS_SGID_FK (SECURITY_GROUP_ID)	
WWV_TASK_DEF_PARAMS_TD_FK (TASK_DEF_ID)	
WWV_TASK_DEF_PARAMS_PK (ID)	
WWV_TASK_DEF_PARAM_UK (TASK_DEF_ID, STATIC_ID)	

APEX Views



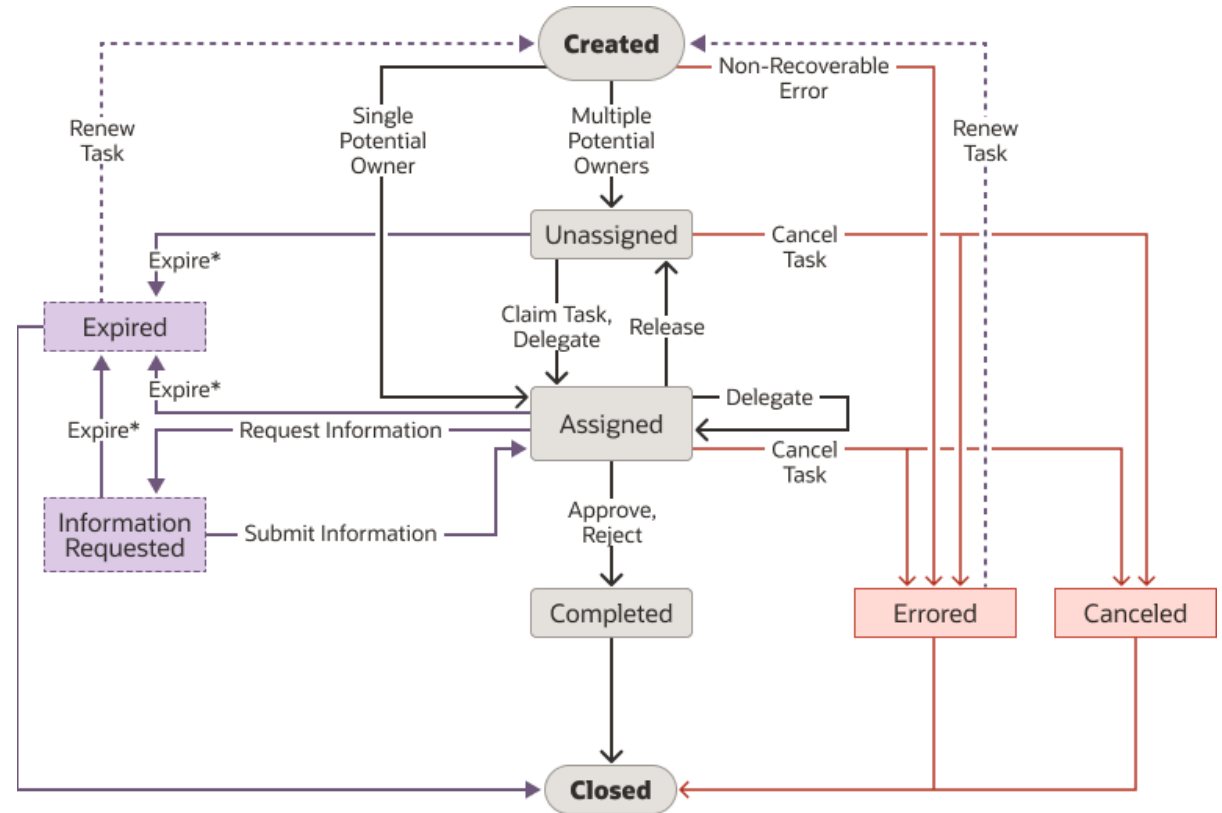
Views

JSON column to records

e.g. Task History

```
wwv_flow_tasks$ a,  
json_table( a.history, '$.history[*]'  
  columns (  
    event_type      varchar2(20) path '$.eventType',  
    event_creator   varchar2(255) path '$.eventCreator',  
    event_timestamp varchar2(4000) path '$.eventTimestamp',  
    old_state       varchar2(32)  path '$.oldState',  
    new_state       varchar2(32)  path '$.newState',  
    old_actual_owner varchar2(255) path '$.oldActualOwner',  
    new_actual_owner varchar2(255) path '$.newActualOwner',  
    old_priority    number        path '$.oldPriority',  
    new_priority    number        path '$.newPriority',  
    old_due_on      varchar2(4000) path '$.oldDueOn',  
    new_due_on      varchar2(4000) path '$.newDueOn',  
    action_name     varchar2(255) path '$.actionName',  
    action_status   varchar2(7)   path '$.actionStatus',  
    action_timestamp varchar2(4000) path '$.actionTimestamp',  
    success_msg     varchar2(4000) path '$.actionSuccessMsg',  
    failure_msg     varchar2(4000) path '$.actionFailureMsg',  
    outcome         varchar2(32)  path '$.outcome',  
    display_msg     varchar2(4000) path '$.displayMsg' ) ) h
```

Approval State Diagram



Connection Key:

Typical Task Flow



Expiry & Request Info. Process



Exceptions to Typical Task Flow



Expired by background job ORACLE_APEX_TASKS_EXPIRE*

Operations

Operation	Description	Potential Owner	Actual Owner	Business Administrator	Initiator
Claim	Reserve a task exclusively to work on it.	✓	✗	✗	✗
Approve	Approve the task	✗	✓	✗	✗
Reject	Reject the task	✗	✓	✗	✗
Release	Release a previously claimed task so that it can be claimed by other potential owners	✗	✓	✗	✗
Delegate	Assign a task directly to a potential owner.	✗	✓	✓	✗
Add Comment	Add a comment to the task. E.g. Leave Request approver might leave a comment justifying why the request was rejected.	✓	✓	✓	✓
Update Priority	Change the priority of a task.	✗	✗	✓	✓
Set Due Date	Update the date on which this task is due	✗	✗	✓	✓
Cancel	Cancel the task. For e.g. an employee wanting to cancel his leave request because he no longer requires it.	✗	✗	✗	✓
Add Potential Owner	Adding one or more users to the list of potential owners who can act on the task.	✗	✗	✓	✗

Substitution Strings and Bind Variables for Tasks

Substitution String Syntax	Description
APEX\$TASK_PK	The primary key value
APEX\$TASK_ID	The task id
APEX\$TASK_SUBJECT	The task subject
APEX\$TASK_STATE	The task's current state
APEX\$TASK_OUTCOME	The task outcome (Only populated for tasks in the Completed state)
APEX\$TASK_CREATED_ON	The timestamp for task creation in YYYY-MM-DD"T"HH24:MI:SS.FF3TZH:TZM format.
APEX\$TASK_INITIATOR	The user who initiated the task Defaults to the logged in user unless a different value is explicitly specified in the Human Task - Create Page Process
APEX\$TASK_DUE_ON	The timestamp for the task due date, in YYYY-MM-DD"T"HH24:MI:SS.FF3TZH:TZM format
APEX\$TASK_OWNER	The user who currently owns the task
APEX\$TASK_RENEWAL_COUNT	The number of times a task has been renewed
APEX\$TASK_MAX_RENEWAL_COUNT	The maximum number of times a task can be renewed according to the expiration policy in the task definition
APEX\$TASK_PREVIOUS_ID	The previous id for a task

Pros & Cons of APEX Tasks

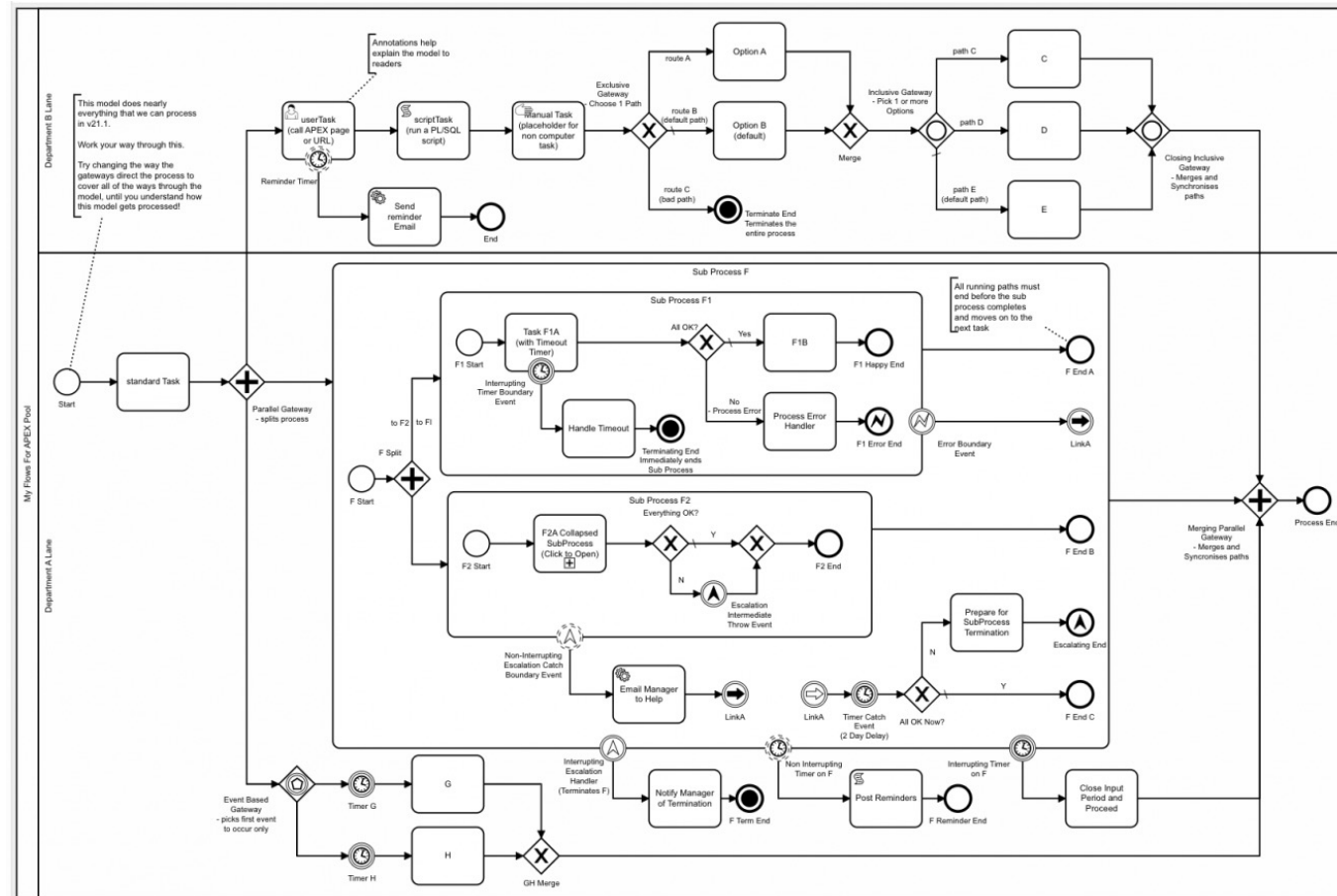
Pros

- Part of APEX and customizable
- Simplicity
- Extensibility (with plug-ins)
- Dynamic (tbd)
- Intelligent (tbd)

Cons

- No built-in visual overview (yet)
- Not so straight forward to do complex flows (yet)

Need more complex design and visual overview? flowsforapex.org



Source: <https://www.insum.ca/6-reasons-you-should-use-flows-for-apex/>

References

- Oracle APEX Documentation – Managing Approvals
<https://docs.oracle.com/en/database/oracle/apex/22.2/htmldb/managing-approvals.html#GUID-9CA34E4A-72EB-483D-AC02-F335020ADA43>
- Introducing Approvals Component in Oracle APEX by Ananya Chatterjee
<https://blogs.oracle.com/apex/post/introducing-approvals-component-in-oracle-apex>
- APEX Approvals Component Continued by Ananya Chatterjee
<https://blogs.oracle.com/apex/post/apex-approvals-component-continued---do-more-with-less>
- Implementing Multi-Approvals in Oracle APEX 22.1 by Ananya Chatterjee
<https://blogs.oracle.com/apex/post/implementing-multi-approvals-in-oracle-apex-221>
- Oracle APEX Workflow Functionality by Ralf Mueller
<https://blogs.oracle.com/apex/post/oracle-apex-workflow-functionality>

Q&A



**Give your end-users an overview of
their tasks**

Dimitri Gielis

Twitter: @dgielis
Blog: dgielis.com
Email: dgielis@united-codes.com

Twitter: @united_codes
Website: www.united-codes.com