UNC Charlotte

Ellucian Banner Workflow
Workflow Development
Standards and Procedures
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Workflow Development Standards

General Workflow Development Standards

- No workflow users, roles, business components, models, business events or business processes will be promoted to the production environment that are not required to operate the workflow product.
- All new workflows will be reviewed prior to development or implementation, making sure that Banner Workflow is the proper solution for the business case. The participants in the review will be determined by the relevant parties, but should generally include the process Subject Matter Experts (SME) and Imaging Workflow Staff.

Workflow Development

- All workflows will be developed and tested in the TEST environment prior to promotion to client servers. Absolutely NO changes will be made directly to a production workflow, without being vetted and approved within the TEST environment. For further details on code promotion reference the Change Management process for Banner Workflow.
- All changes to an existing workflow must have the version number changed, and will be in the format of YYYYMMDD.
- No more than one production change, to a workflow will happen per day.
- Workflow components, procedures, and functions should be developed for reusability. Multiple business components, functions, etc. should not be developed to do the same function.
- All documentation and resources for each workflow will be stored in the following manner:
  - All database code will be installed in the WFOBJECTS schema.
    - This includes all Function, Procedures, Packages, and Triggers
  - All analysis and training documentation will be stored within the banner subversion repository.
    - Prior to code promotion all of the referenced documentation must be zipped up and emailed to the Imaging and Workflow Team for subversion submission.
- All code from non UNCC sources will be thoroughly vetted and reviewed by Imaging Workflow Staff in conjunction with the relevant Subject Matter Experts (SME). This does not imply that all non UNCC workflows will be installed into production.

Standards and Naming Conventions

Users

- Users will have the same Banner user id and will be authenticated externally through Banner. These credentials will be the same as the individuals NinerNet account credentials. If a user id is required that does not exist in Banner, the user must go through the established banner account request process and have signed a University Confidentiality Agreement.

Roles

- All roles will be created by Imaging and Workflow System Administrators. Role names should closely follow job roles and should be re-usable. Before any new role is created within the Workflow system, a thorough review process must be completed to make sure that overlapping roles are not created. Preference should be given to giving additional rights to existing roles.
- Both Primary and Proxy user role assignments will be made by the Imaging and Workflow System Administrator. However, the end user will be responsible for ensuring a proxy is activated when the end user will be out of the office.

Workflow Administrators and Owners

- Only the Imaging and Workflow System Administrator will have the SysAdmin role.
- For every process model, the SysAdmin role will be assigned as an Administrator.
• Each department requiring the ability to model workflow business processes will be given its own role. This role will be used to fill in the “owner” of the built workflow.
  o The naming convention for the role will follow the standard – DEPTCODE-OWNER (DEPTCODE is a 3 to 4 character department code)
• Since a workflow can span more than one business department, the owner of the business process will be assigned as the workflow owner.
• More than one person may be assigned to the role designated as owner. The addition of new individuals to a DEPTCODE-OWNER role must be approved, in writing, by the department head.

Business Components and Categories

• Components found in existing categories should be reused when possible.
• If an existing component must be modified, it should be copied and renamed in an intuitive manner following the convention below. Initial Naming Before First Underscore MUST be in CAPS with No Spaces:
  o For Banner Forms – INB_FORMNAME_Form Description (from Banner)
  o For Web Applications – WEB_APPLICATIONNAME_Work Description
  o For Desktop Applications – DT_APPLICATIONNAME_Work Description
  o For SQL Queries – SQL_DATABASE_Short Description
  o For Stored Procedures – SP_DATABASE_Short Description
• The description for each component should clearly define the use, table, or function that the component satisfies.
• A component’s release ID will have
  o A release ID of the date in the following format: YYYYMMDD
• A component’s source will have
  o The creator’s logon in caps
• Extreme care should be made before modifying any delivered workflows. All modifications will be reviewed by Imaging and Workflow staff.

Workflow Models (Created Through Workflow Modeler)

• Workflow process models should be named with the Module Code, an underscore and a descriptor of the workflow to not exceed 20 characters.
• Spaces are not permitted and should be substituted with an underscore.
• Valid module codes are:
  o A – Advancement
  o F – Finance
  o G – General
  o N – Position Control
  o P – Payroll
  o R – Financial Aid
  o S – Student Housing, Student Records, Recruiting and Admission
  o T – Accounts Receivable
• Camel Case should be used to make the descriptor more legible.

An example of a valid process model name is S_TermWithdrawal.

Process Model Object Colors

The following color chart will be used for Process models:
Workflow Activity RGB Color

<table>
<thead>
<tr>
<th>Activity Type</th>
<th>RGB Color Codes</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automated Activity</td>
<td>204 204 255</td>
<td>Light Blue</td>
</tr>
<tr>
<td>Banner Form</td>
<td>204 255 204</td>
<td>Light Green</td>
</tr>
<tr>
<td>Manual Activity</td>
<td>255 204 255</td>
<td>Light Pink</td>
</tr>
<tr>
<td>Email Activity</td>
<td>204 255 255</td>
<td>Light Turquoise</td>
</tr>
<tr>
<td>Custom Activity</td>
<td>255 204 153</td>
<td>Light Orange</td>
</tr>
<tr>
<td>Decision Diamond</td>
<td>153 153 153</td>
<td>Gray</td>
</tr>
<tr>
<td>Transition</td>
<td></td>
<td>Black</td>
</tr>
<tr>
<td>Start/Stop</td>
<td>204 00</td>
<td>Red</td>
</tr>
<tr>
<td>Note</td>
<td>255 255 204</td>
<td>Light Yellow</td>
</tr>
</tbody>
</table>

The lightest colors possible must be used to ensure readability on printed copies of the workflow process definition model.

User Visible Activities

- Workflow activities should be named with a descriptor of the task to be completed.
- The activity names will appear on the user’s work list. The name should be something meaningful and easily readable for the user. Workflow developers should work with Functional users to decide on names for Workflow activities to ensure that the activity name will be meaningful to those who will be performing the work.
- Upper and lower case should be used for readability and underscores should used to make it readable to end users. Do Not Use Camel Case here!
- No spaces or special characters should be used (With the exception of Underscores).
- Each activity within a workflow must have a unique name.

Example: Enter_User_Detail

Non Visible Activities

- These activities are not visible to the user so should have a prefix (as defined below) and then a Camel Case description after.
- The names of automated activities should not include underscores and should always be prefixed with 'AA_'
- The names of email activities should not include underscores and should always be prefixed with 'EMAIL_'.
Example: Email_NotifyUserOfAction, AA_GetUserDetailForAction

Parameters

- Parameters should be named the same as the field in Banner minus the table name if the field exists in Banner.
  - For example, the persons Banner id and first name should always be represented as "id" and "first_name", as these fields are spriden_id and spriden_first_name in Banner.
- All parameters MUST be in lower case and words should be separated with underscores.
- If the field does not exist in Banner, then a meaningful descriptor should be used, using all lower case with an underscore separating each word.
- Component Parameters should match context parameters in name and case.
- If like parameters end with a number, then it's encouraged to keep with the same number of digits so the parameters sort properly
  - Example: rule01, rule02, rule03, rule10 (rather than rule1, rule2, rule3, rule10)

Business Events / Banner Events

- Business Events / Banner Events should be given a descriptive name, describing the functional process that was captured by the event.
- Events are named in upper case, and should be restricted to 13 characters and will begin with WF_ (the underscore must follow the WF).
- The WF prefix is used to easily distinguish Workflow events from other Banner events maintained within that data source.
- Using the Workflow Event Wizard, a Business Event in Workflow will have the same name as the Banner Event.

Using the example workflow name above, a business event might be named: WF_TRMWITHDRW

Business Processes

- The name of the Business process associated with an “Associated Workflow” is the same as the descriptive part of the primary Workflow name, after the Module Code (See Module Code In Workflow Models Section),
- For example: the Business Process associated with S_Term_W is: Term Withdrawal.

Banner Event Parameter Codes

- Parameters defined within Banner Events should match those in the workflow parameters. If necessary a new Banner Event Parameter code should be created.

Banner Event Parameter Group Codes

- The Parameter Group Code can have a maximum length of 10 characters. Therefore, parameter group codes will correspond with the first 7 characters of the Banner event name, with the prefix of ‘WF_’.

Using the example event name above, the parameter group would be named: WF_TRMWI

Workflow Oracle Objects - General

- These standards are created in concordance with published Banner PL-SQL Standards
- Reuse of objects is encouraged. Where an existing package or procedure can be used within a workflow, this should be done.
- Oracle database objects created specifically for a workflow will reside in the WFOBJECTS schema.
Scripts for creation of Oracle database objects will be stored the following source control location:
- Banner Subversion Repository – grouped by the workflow name
- All Oracle Objects created for Workflow (Packages, Tables, Triggers, Functions, Procedures, etc.) must be developed and vetted by ITS Banner personnel.

**Triggers**

- A trigger should never launch more than one Banner Event. Should two Banner Events need to be launched based on the same action to the same table, a separate trigger will be written.
- Triggers should be named according to the following convention:
  - Database Trigger objects within the database have a maximum 29 character limit using the following format: `ywft_abcded_xxxxxxxxxxxxxx`
  - The syntax is as follows:
    - `y = uncc`
    - `wf = Product identifier for workflow`
    - `t = Trigger`
    - `abcded = Table name`
    - `xxxxxxxxxx = Meaningful trigger name up to 13 characters in length. If possible, the corresponding event name should be used.`
  - Database Trigger scripts used to create database triggers will have the same name as the object itself.
  - Using the example event name above, the trigger and trigger script would be named: `ywft_sgdstdn_wftrmwithdw`

**Packages**

A package should be created when multiple procedures using similar data and/or tables are necessary.

- The naming convention to be used for packages is: `ywfkbbbb`
- The syntax is as follows:
  - `y = uncc`
  - `wf = Product identifier (Workflow)`
  - `k = Pac(K)age`
  - `bbbb = Four character mnemonic that uniquely identifies the object.`

Both the package header and body should be included in the package source as one code file. All package names should be prefixed with the WFOBJECTS schema name.

**Procedures and Functions**

Procedures and Functions can be created as standalone objects. Database objects that are procedures or functions can be named to a limit of 29 characters using the following conventions:

- Within A Package: `pxxxxxxxxxxxxxxxxxxxxxxxxxxxxx` and `fxxxxxxxxxxxxxxxxxxxxxxxxxxxxx`
  - The syntax is as follows:
    - `p = (P)rocedure`
    - `f = (F)unction`
    - `xxxxxxxxxxxxxxxxxxxxxxxxxxxxx = Meaningful name, up to 27 characters in length`
  - Standalone: `ywfp or fxxxxxxxxxxxxxxxxxxxxxx`
    - The syntax is as follows:
      - `y = uncc`
      - `wf = Product identifier (Workflow)`
      - `p = (P)rocedure`
      - `f = (F)unction`
      - `xxxxxxxxxxxxxxxxxxxxxxxxxxxxx = Meaningful name, up to 27 characters in length`
The following examples illustrate this convention:

- p_grade_point_avg_calc
- f_fund_override
- p_salary_enc_calc
- ywfpopendoor
- ywffopendoor

Although this standard allows for the names of Functions or Procedures to be up to 29 characters in length, we strongly recommend that the names be kept as short as possible while at the same time effectively indicating their purpose. Many ancillary products outside of Banner and Banner Workflow have size limitations when passing Function and Procedure names, so the shorter the name the better.

Promoting Workflows to Production

Workflow Model Documentation

- A Word file containing the workflow model documentation must be created for each workflow and submitted to Imaging and Workflow staff for storage in the banner subversion repository prior to promotion.
- Workflow documentation including training materials and supporting specifications should be stored with the workflow model documentation in the repository.
  - The repository shall be formatted like:
    - trunks
      - sql
      - docs
      - xml
    - tags
- Before a workflow is changed and new documents / sql are loaded the trunk will be tagged off with a relevant revision number.

Workflow Extracts

- Workflow promotion to production will occur only after complete testing, owner sign-off, documentation submission, and change ticket approved.
- Only process models with an active status will be promoted. A model that is in development or test status will not be extracted.
- A backup of the extracted workflow model will be stored in an appropriate source control location along with PL/SQL object code. (see trunk subdirectory above)

Additional Steps

- Any objects used by the process model will be compiled to the WOBJECTS schema in Production, and tested for grants and privileges.
- Events will be created in the Production instance of Banner. The installation will be scripted for production. Distributed developers should work with the Workflow System Administrator to create the relevant script.
- The Workflow Event wizard will be used to create the Workflow Business Event.
- The Business Process(es), process definition associations, guard conditions will be created manually.
- Users will be assigned to roles after the Workflow process definition has been imported.

Operational Procedures

Obsolete Workflow Models and Associated Objects
When a workflow model is no longer required, its status should be changed to Inactive and then Obsolete.

Archival and Purge of Workflow Transactions

All complete workflows will be archived after 2 years.

Roles and Responsibilities

Expectations of Process Model Owners

Workflow Owners must do the following:
- Check for alerts daily.
- Monitor in-process workflows and handle issues of overdue and lagging workflows within their functional areas.
- When an alert occurs due to technical problems, work with the Workflow System Administrator to resolve the issue.
- Provide signoff for all code promotions
- Provide signoff for all security access requests, relevant to their functional area.

Expectations of Business Analysts

The Business Analyst must do the following:
- Conduct Workflow Process Analysis sessions
- Develops and tests models based on functional needs
- Create roles as needed to support models
- Define specific requirements for triggers and procedures to support the process model
- Schedule and oversee testing of models
- Follow all naming and process standards referenced in this document

Expectations of the System / Server Administrator

The System Administrator/Workflow Developer must do the following tasks:
- Manage workflow users / Security
- Manage the Business Component Catalog
- Create / Coordinate Events, Business Processes, Triggers and other Oracle database objects as required by modeling needs.
- Maintain the Workflow Environment (e.g. the database, the Workflow Engine, and configurations)
- Migrate models from one instance to another
- Perform upgrades
- Start and stop the OC4J and Workflow engine as necessary
- Make changes to the configuration.xml and re-deploy EAR files
- Adding external data source configurations in the configuration.xml and the Banner Workflow Administration client
- Ensure that proper cloning procedures are followed for the workflow environment
- Ensure that the workflow environment is stopped prior to Oracle database maintenance and started afterwards.