

# ONAP Dublin Workflow Designer DRAFT

ONAP Dublin Workflow Designer DRAFT

Version v01 ? Proposed



|                      |                        |
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Overview, Scope, Dependencies

Dublin Workflow Designer

|              |  |
|--------------|--|
| Name         | Workflow Designer  |
| Release      | ONAP - Dublin  |
| Contributors | AT&T: SO, VID, SDC WF Independent Distribution<br>Amdocs: Workflow Editor, Activity Specification, |
| Dependencies | SDC and SO workflow development of Casablanca release  |

|  |   |
|--|---|
|  | Ansible/Chef/Puppet servers and scriptbooks for E2E operation |
|  |   |

## Document Version

|                                 |                 |
|---------------------------------|-----------------|
|                                 |                 |
| <b>Document last updated :</b>  | <b>11/19/18</b> |
| <b>Document Latest Version:</b> |                 |
| <b>ONAP Wiki Document link:</b> |                 |

## Document Revision History

[illegible]

## Introduction

The purpose of this document is to outline the scope, design and requirements for the Initiation of user designed workflows created using the SDC Workflow Designer and extension of the possible activities that can be used to design a workflow.

|                                    |   |
|------------------------------------|---|
| <b>High level Key deliverables</b> | Develop functionality to support the execution of user designed workflows using the Self Serve SDC Workflow Designer Editor tool. |
|------------------------------------|---|

### Out of Scope (OoS) items (For this project & Release)

| # | Description  |
|---|--|
|   | Conflict avoidance other than pserver.   |
|   | Ability to provide Workflow Outputs to the user (although Amdocs may be developing this, it will not be implemented in SO or VID).       |
|   | Workflow functionality is only applicable to vNFs instantiated on an AIC and does not apply to Flexware(vNFs on uCPE).                   |
|   | Development of new workflow activities (building blocks and actions) in the current release other than those specified in this document. |
|   | An option at the VID interface during WF initiation for the user input "skip" a manual task (pause) activity.                            |
|   | Prevent a user from closing a maintenance ticket in the ticketing system when it was opened by the scheduler.                            |
|   | APPC vNF onboarding functionality moving to SDC. This is being handled by Configuration Management project.                              |



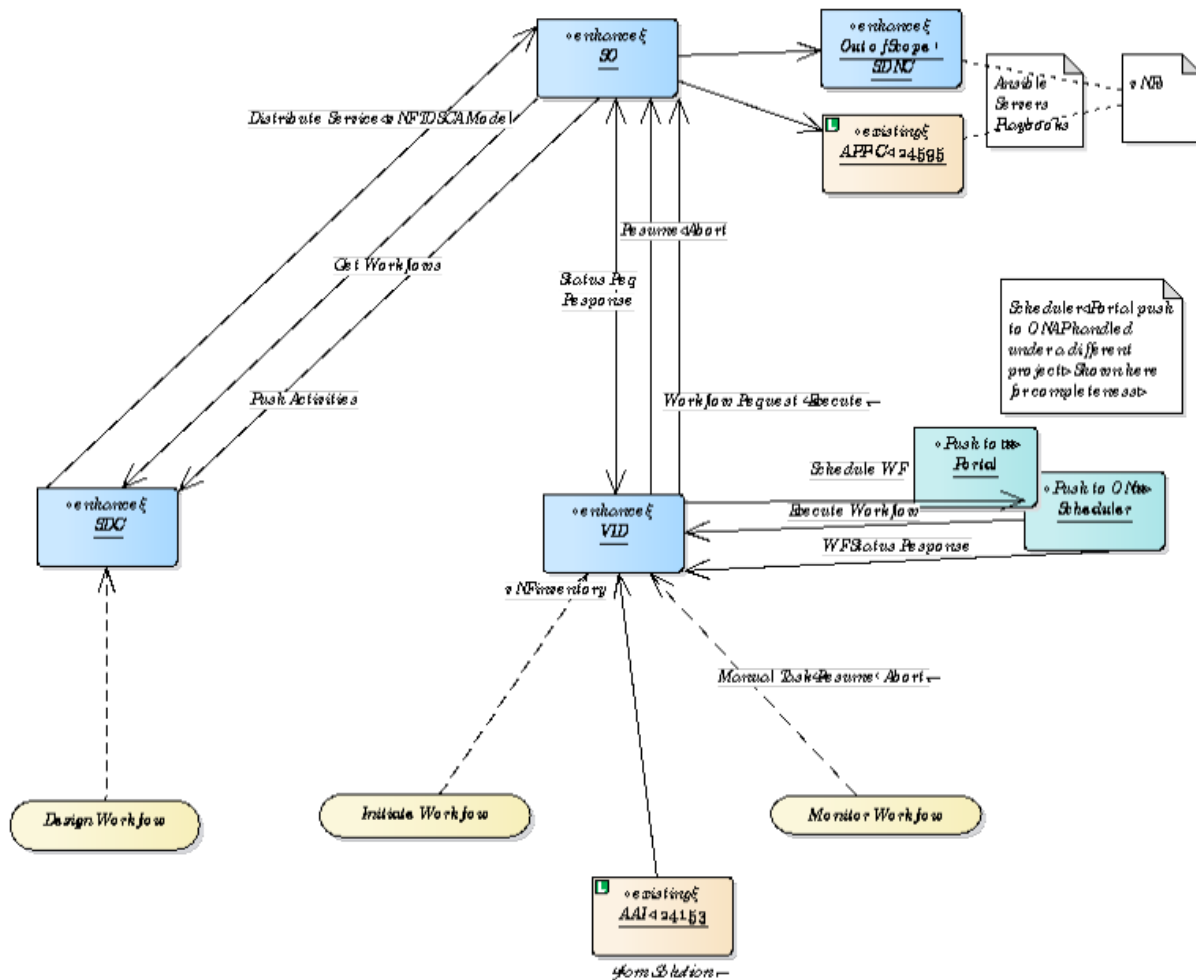
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### **Backward Compatibility**

- How previous-release capabilities worked before and will change with this project:
- *The general process for the execution of workflows from the user perspective will not change except for some user experience improvements, if funding & time is available.*
- *Previously, it was required that a workflow be certified and associated via a ticket with a vNF Model version for it to be executed on instances of that vNF Model/Version. The association was stored in a temporary table in VID and required a MOP. This project removes the need for the ticket, MOP and VID table by certifying a vNF and associating the workflow with the vNF Model/version in SDC. Certification can utilize Tenant Isolation, when available, so that the workflow can be designed once in the production environment. Today, a user must export a workflow from the test env. and import in production.*
- Per component requirements to support old and new model data and artifacts
- *The Workflow-vNF association table in VID will be removed, so no associations will exist until they are made in SDC. See how to in next bullet.*
- *To associate a certified Native Workflow – vNF pair, Designer needs to define the native workflow definition in SDC, associate the WF to VNF Operation. As part of VNF certification Workflow Definition of Native WF will be certified. The goal is to make the testing and certification process usable to the operations users.*
- per component requirements to perform data migration scripts
- *VID to maintain ability to collect parameters for Native SO workflows.*

## Block Diagram

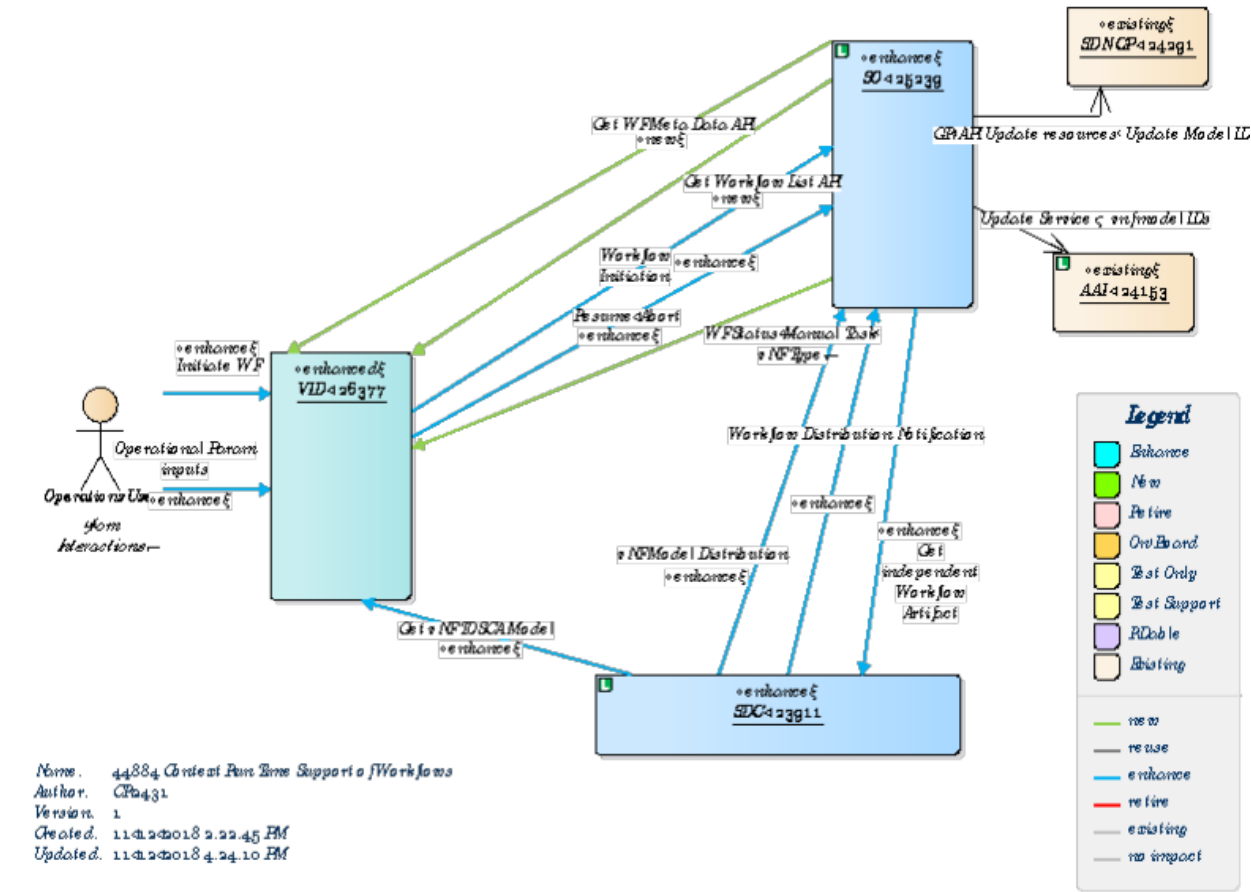
### Flow Designer Orchestration High Level Diagram



Flow Designer Orchestration High Level Diagram

## Solution

Package in package '44884 Run Time Support of User Designed Workflow'  
Solution  
Version Phase 1.0 Proposed  
mm7817 created on 11/12/2018. Last modified 11/12/2018



44884 Context Run Time Support of Workflows

Operations User

|                             |               |                       |
|-----------------------------|---------------|-----------------------|
| Actor Name: Operations User |               |                       |
|                             | Stereotype:   |                       |
|                             | Complexity:   | Easy                  |
|                             | Notes:        |                       |
|                             | Last Updated: | 11/12/2018 2:17:10 PM |

AAI

|                  |             |            |
|------------------|-------------|------------|
| Object Name: AAI |             |            |
|                  | Stereotype: | «existing» |
|                  | Complexity: |            |

|  |               |  |
|--|---------------|--|
|  | Notes:        | Active and Available Inventory<br><br><b>Impacts</b><br><br><ul style="list-style-type: none"> <li>No Impacts</li> </ul> |
|  | Last Updated: | 11/12/2018 3:10:52 PM  |

## Portal

|                     |               |  |
|---------------------|---------------|--|
| Object Name: Portal |               |  |
|                     | Stereotype:   | «Push to ONAP»   |
|                     | Complexity:   |  |
|                     | Notes:        | Portal<br><br><b>Impacts</b><br><br>Push Scheduler interface capabilities to ONAP. |
|                     | Last Updated: | 11/12/2018 4:27:13 PM  |

## SDC

|                  |               |  |
|------------------|---------------|--|
| Object Name: SDC |               |  |
|                  | Stereotype:   | «enhance»  |
|                  | Complexity:   |  |
|                  | Notes:        | Service Design and Creation<br><br><b>Impacts</b><br>Note Activity inputs are virtual to the WF Editor via SO's use of the Trigger/Pull Patter concept.<br><br><ul style="list-style-type: none"> <li>Store Workflow as an independent artifact in Camunda BPMN format with a UUID, invariant UUID, WF description.</li> <li>TBD - May use a different method for testing and storing successful test data to vNFType/Version. This has to be easy and seamless for operations. *** Workflows will be stored in the vNF model as references to the actual BPMN that will be stored as independent artifacts. Enhance TOSCA Parser to allow ECOMP components to extract the certified workflow names from the vNF Model based on the Service Model.</li> <li>Develop a copy, rename, save workflow operation. (Workaround is to export WF/rename/import). SDC to create a new "WF API" for the WF Editor with two operations: <ul style="list-style-type: none"> <li>1. Get the list of available workflows used by the WF designer</li> <li>2. Get the WF meta data used by SO</li> </ul> </li> <li>Distribute new workflow artifact notification to SO (over DMAAP).</li> <li>Alignment of the WF GUI to ECOMP standards (Initially proposed to come from CasaBlanca, but final timeline TBD).</li> <li>Deprecation and deletion of workflows is out of scope for this release. This is more complex than it seems on the surface as workflows cannot be deleted until all schedules using that workflow have executed.</li> </ul> <p>Notes:</p> <ul style="list-style-type: none"> <li>Only standard ECOMP property names as per HEAT guidelines are used in workflows, For non-HEAT vNFs, a user MUST associate a WF with a vNF operation. When Data Dictionary is developed, vNF properties will be mapped to standard ECOMP properties when onboarded.</li> <li>Workflows will only be versioned at the major version number level. Workflow inputs/outputs may not be changed. If a workflow is edited in a manner that changes the definition, i.e. the inputs or the outcome of the workflow, it must be copied and (copy may be achieved by exporting/rename/importing) given a new name.</li> </ul> <p>SO process to get WF BPMN and meta data:</p> <ul style="list-style-type: none"> <li>SO to Invoke WF API with get meta data operation to obtain the Workflow meta data which includes a reference to the BPMN.</li> <li>SO then invokes an enhanced Generic artifact API to obtain the BPMN based on the BPMN reference in the WF API</li> <li>Workflows to be given a unique ID (UUID and invariant UUID)</li> <li>Only major versions of Workflows are supported in this release. What this implies is that an updated workflow will not negatively impact an already scheduled WF (e.g. can add an activity, fix a bug but cannot change inputs/outputs).</li> </ul> <p>Note: A data dictionary to map vNF property names provided by the vendor to standard ECOMP property names was not deemed necessary for this release (as per S. Vellanki) as vNF property names that are used by CM workflows are standard based on HEAT Guidelines. Configuration properties need to be standardized if workflows use them from the vNF model. Today, configuration properties are not used and a spreadsheet is uploaded to configure or modify a configuration.</p> <p>User Guidelines Required:</p> <ol style="list-style-type: none"> <li>WF and parameter names' and descriptions' guidelines are required for WF designers.</li> <li>A delete and deprecate WF process is needed.</li> </ol> <p><b>Future out of scope:</b></p> <ul style="list-style-type: none"> <li>Estimated Length of time for workflow execution to be entered at workflow design time based on the vNF type and included in the vNF</li> </ul> |
|                  | Last Updated: | 11/12/2018 4:23:54 PM  |



## SDN-CP

|                     |               |   |
|---------------------|---------------|---|
| Object Name: SDN-CP |               |   |
|                     | Stereotype:   | «existing»  |
|                     | Complexity:   |   |
|                     | Notes:        | SDN Controller Platform<br><br><b>Impacts</b> <ul style="list-style-type: none"> <li>Are there any actions to push to ONAP?</li> <li>BAU - Update internal GR Database</li> <li>BAU create vNFCs</li> </ul> |
|                     | Last Updated: | 11/12/2018 4:27:48 PM   |

## SO

|                 |               |   |
|-----------------|---------------|---|
| Object Name: SO |               |   |
|                 | Stereotype:   | «enhance»   |
|                 | Complexity:   | Medium  |
|                 | Notes:        | Service Orchestrator<br><b>Impacts</b> <ul style="list-style-type: none"> <li>SO to develop a new API for VID to obtain the list of all available and certified Workflows (SO Native and User Designed) for the user selected vNF Type and the Meta Data for the Selected for Workflow.</li> <li>The workflow artifact will be versioned at major version level only This implies that only the implementation may change and not the definition (no input/output changes permitted). Full versioning is out of scope.</li> <li>Enhancement to VID-SO Instantiation API to be more flexible to consume workflow parameters. <ul style="list-style-type: none"> <li>SO to implemented the Trigger-Pull pattern concept to maintain data complexities within SO in the Casablanca release. This is important for Activities requiring complex inputs to support operations such as Delete &amp; Build and Build &amp; Replace.</li> </ul> </li> <li>SO maintains the input needs of the activities and obtains the needed data from ECOMP resources or from user inputs from VID and stores them in a data store. As the activities are executed they obtain the needed data from the data store and write their outputs to the data store for subsequent activities to retrieve.</li> <li>Requires recognition of a new Distribution Notification (over DMaaP) for Workflow Distribution.</li> <li>SO consumption of ASDC WF API "Get MetaData" to obtain the WF definition/Metadata (WF name, WF Description, UUIDs, inputs, input descriptions, reference to the WF BPMN artifact)</li> <li>All Activities (building blocks) presently using vNF API will be updated to use GR-API.</li> <li>SO updates inventory (A&amp;AI) and SDN-CPor SDN-R with new service and vNF model IDs for all SW Upgrade operations.</li> <li>The minimum requirement for Workflow errors is to execute Rainy Day Handling where the default policy is set to terminate the workflow and issue a TM ticket. The target solution would be for Rainy Day Handling to stop the workflow and allow the user to respond to an error and have a choice to skip/continue or abort. This will be done when possible.</li> <li>The existing Rainy Handling will be utilized at the Activity (building block) level.</li> <li>Enhance Resume/Abort communication for use as User/VID response to Manual Handling state.</li> <li>When the workflow is aborted by the user as the response to "Pause for Manual handling" no trouble ticket is issued.</li> <li>SO to execute the activities (BBs) BAU.</li> <li>SO to include the NF_Role in status response to VID.</li> <li>For change operations that include a new Service and vNF Model IDs, SO must instruct the controller to make the appropriate updates in AAI immediately after the change operation is successful.</li> <li>All Activities presently using vNF-API must be enhanced to use GR-API.</li> <li>If SDC implements the workflow as an independent artifact (may be deferred)</li> <li>Requires enhancement to SDC/SO Generic Artifact API to "Get" Workflow BPMN. Workflow BPMN is stored as an "independent" artifact in ASDC with an identifier.</li> </ul> <p>Future Requirement NOT Dublin</p> <ul style="list-style-type: none"> <li>Ability to rollback a workflow by rolling back each building block or action in the workflow (backward chain). Requires SO to build Rollback into each BB and Action. May also require additional checking at the workflow level to ensure that a full rollback is possible.</li> <li>Proposal is for Controller to obtain Action parameter/value pairs that are specific to a workflow by "getting" them from SO and other sources and not have them included in the Action API. The concept is to make the action APIs more generic and the internal API function code to have the brains on what parameter values are required and where to get the values. This is consistent with what is being designed for control loop-Service Assurance using policy, however, WFs are more consistent than the Policy concept of Service Assurance.</li> </ul> |
|                 | Last Updated: | 11/12/2018 3:10:28 PM   |

## Scheduler

|                        |  |  |
|------------------------|--|--|
| Object Name: Scheduler |  |  |
|------------------------|--|--|

|  |               |   |
|--|---------------|---|
|  | Stereotype:   | «Push to ONAP»                                    |
|  | Complexity:   |   |
|  | Notes:        | ECOMP Scheduler<br><b><u>Impacts</u></b><br><br>• |
|  | Last Updated: | 11/12/2018 4:26:11 PM                             |

## VID

|                  |               |   |
|------------------|---------------|---|
| Object Name: VID |               |   |
|                  | Stereotype:   | «enhanced»  |
|                  | Complexity:   |   |
|                  | Notes:        | Virtual Infrastructure Deployment (MOTS ID: 26377) (PRISM ID: 26377)<br><br><b><u>Impacts</u></b><br><br><b><u>Impacts</u></b><br><br><ul style="list-style-type: none"> <li>• VID to allow user to search for vNF types based on the Service Model.</li> <li>• VID to provide user with tools that allows them to search and filter the list of vNF instances to obtain the list of instances desired (need input from real users on required filters)</li> <li>• VID will extract the list of available workflows by consuming and using a WF Search API provided by SO.</li> <li>• Available workflows will be listed by unique operation name.</li> <li>• Only workflows shall be displayed for the selected vNF type to the user. Tested and SO Native WFs will be marked as such.</li> <li>• Ingest new API that allows VID to obtain workflow meta data (UUID, invariant UUID, WF input/output parameters). Workflow Meta Data from SO. For this release, SO is the acting Workflow Run Time Catalog (RTC).</li> <li>• Prompt user for workflow input parameters required by the "Workflow". Input parameters are found in the WF Definition/MetaData</li> <li>• VID shall handle both simple and complex input data types (nested arrays).</li> <li>• Accept user input for parameters and package in the workflow request.</li> <li>• Schedule and submit workflow request to SO.</li> </ul> <p>Existing:</p> <ul style="list-style-type: none"> <li>• Selection of a vNF type</li> <li>• Selection of a workflow/operation</li> <li>• Choose vNF instances to execute workflow on</li> <li>• Scheduling of WF</li> <li>• Passing the WF request to SO when the scheduler indicates to VID that the scheduled time has arrived.</li> </ul> |
|                  | Last Updated: | 11/12/2018 3:19:45 PM   |

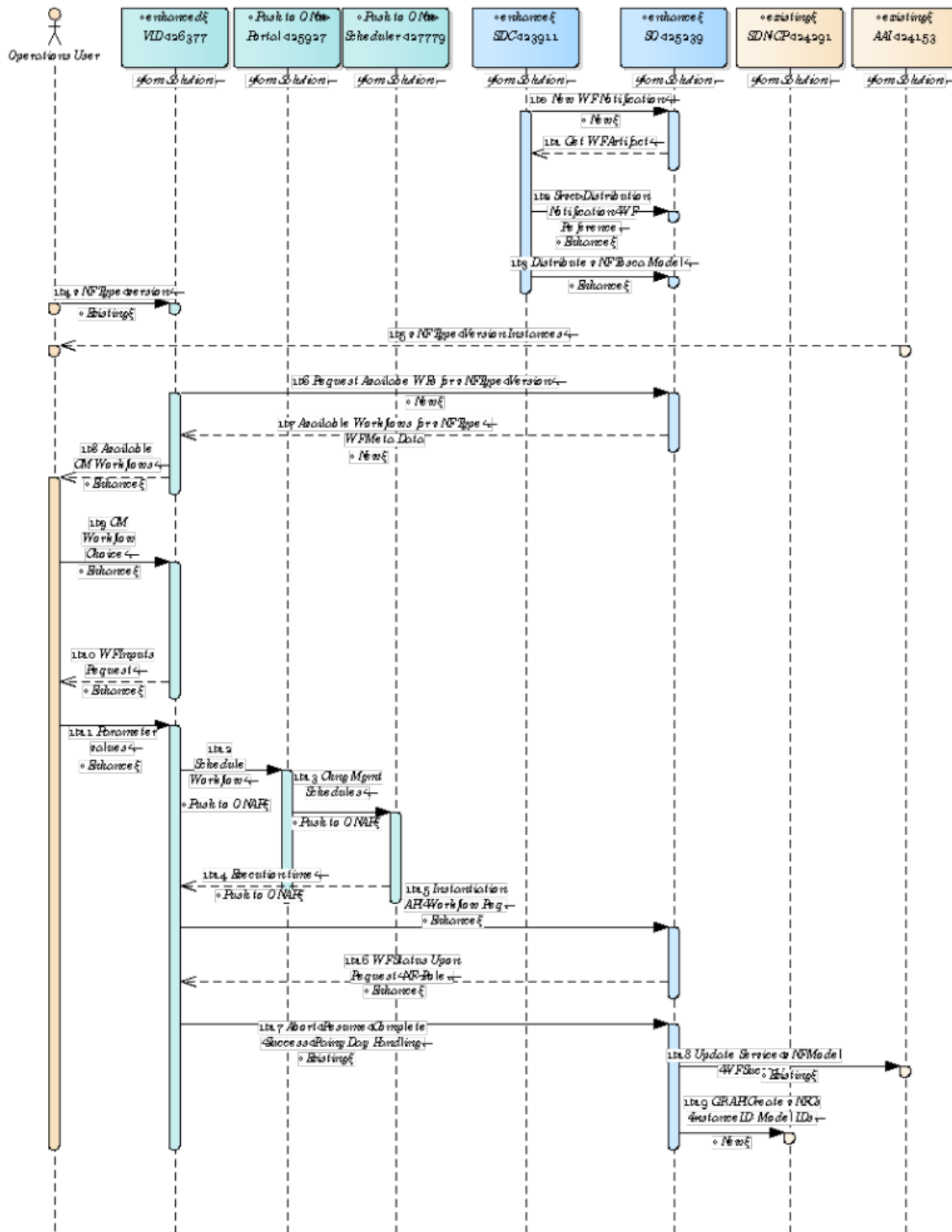
## Sequence Diagram: Run Time Support of User Designed Workflow diagram

*Interaction diagram in package 'Interactions'*

Sequence Diagram: Run Time Support of User Designed Workflow

Version 1

CR2431 created on 11/12/2018. Last modified 11/21/2018

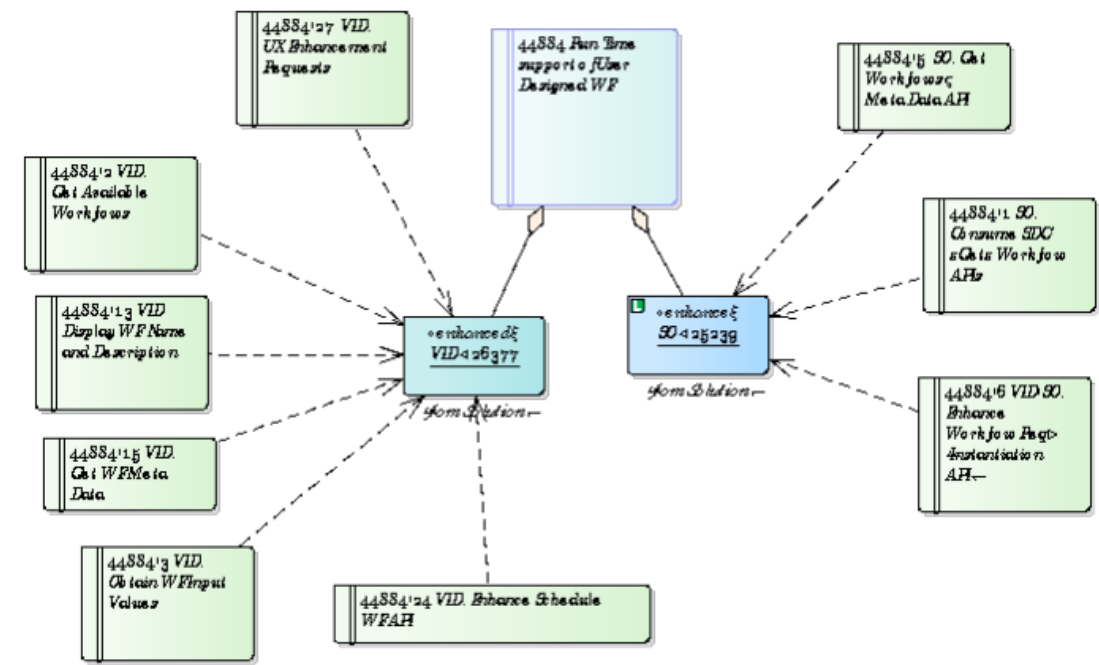


Name: Sequence Diagram: Run Time Support of User Designed Workflow  
 Author: CP431  
 Version: 1  
 Created: 11/22/2018 2:22:46 PM  
 Updated: 11/22/2018 1:32:27 PM

# Requirements Run Time Support of Workflows

## 44884 Requirements Run Time Support of Workflows

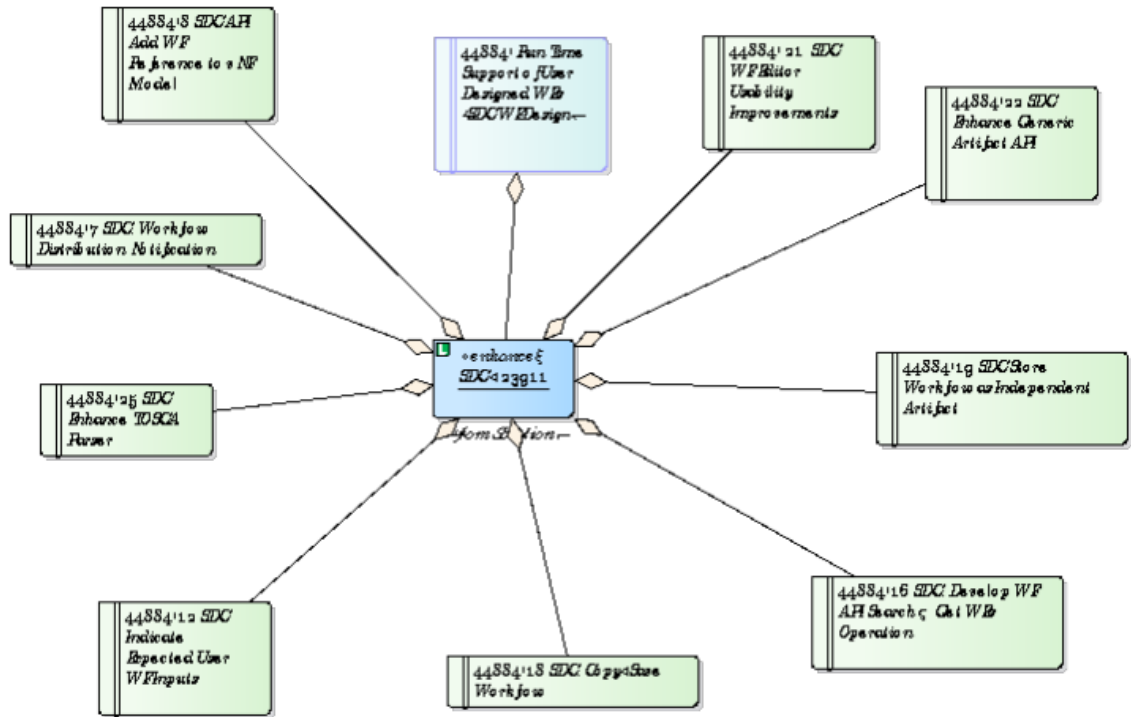
Version 1, Author:CR2431  
Created on 11/12/2018. Last modified 11/14/2018.



Name. 44884 Requirements Run Time Support of Workflows  
Author. CR2431  
Version. 1  
Created. 11.11.2018 2.22.46 PM  
Updated. 11.14.2018 4.42.10 PM

44884 Requirements Run Time Support of Workflows

## 44884 Requirements SDC Support of User Designed WFs



44884 Requirements SDC Support of User Designed WFs

|   |                |   |
|---|----------------|---|
| FunctionalRequirement Name: 44884 SO Enhance InPlace Activity to Update Inventory |                |   |
|   | Notes:         | SO to enhance the InPlaceSWupdate Activity to update inventory (A&AI) with the new vNF model version ID.<br>Note: The SW version is updated in the .env file contained in the vNF Model by the designer in ASDC causing the vNF Model version to be changed to the current version + 1. |
|   | Keyword:       |   |
|   | Status:        | Proposed  |
|   | LOE:           | Medium  |
|   | Create d:      | 11/12/2018 2:18:16 PM   |
|   | Last Update d: | 11/20/2018 3:31:44 PM   |

|  |               |   |
|--|---------------|---|
| Requirement Name: 44884- 21 SDC WF Editor Usability Improvements |               |   |
|  | Notes:        | TBD based on prioritized input from users as they "play" with the WF Editor. Need to set up WF Designer in a stable lab for users.<br><br>Budget an Easy. |
|  | Keyword:      |   |
|  | Status:       | Proposed  |
|  | LOE:          | Easy  |
|  | Created:      | 11/20/2018 11:16:47 AM  |
|  | Last Updated: | 11/20/2018 11:28:28 AM  |

|   |               |   |
|---|---------------|---|
| Requirement Name: 44884-12<br>SDC Indicate Expected User<br>WF Inputs |               |   |
|   | Notes:        | <p>The SDC Editor must give the WF (hence SO and VID) a way to indicate what inputs are expected from the initiating user as input to the workflow. Those inputs are expected by the Activities used in the workflow. Any Activity inputs not provided by the user are expected to come from the other Activities used in the workflow by SO.</p> <ul style="list-style-type: none"> <li>Workflow inputs that require values to be entered by the user e.g. length of estimated WF execution time, vNF Instance IDs, are given descriptions by the WF designer/user to assist the VID user's understanding of what they are expected to enter for those input parameters when setting up a WF for execution.</li> <li>Some WF inputs may be vNF properties extracted by other ECOMP components (VID, SO). Those components understand the properties they need to access from the vNF TOSCA model as inputs to the workflow. .</li> <li>The only vNF properties that can be used as workflow inputs where the workflow is not associated with a vNF are HEAT properties.</li> <li>A vNF property outside of HEAT that requires user input to a workflow can only be utilized by associating a workflow to a vNF operation. (Provided by ONAP R2 Project)</li> </ul> |
|   | Key word:     |   |
|   | Status:       | Proposed  |
|   | LOE:          | Medium  |
|   | Created:      | 11/13/2018 4:52:14 PM   |
|   | Last Updated: | 11/13/2018 5:21:46 PM   |

|  |               |   |
|--|---------------|---|
| Requirement Name: 44884-8 SDC API Add WF<br>Reference to vNF Model |               |   |
|  | Notes:        | Develop an API to add a WF Reference to the vNF model indicating that the workflow was tested for the vNF Type/Version. Also include the users id and date. |
|  | Keyword:      |   |
|  | Status:       | Proposed  |
|  | LOE:          | Medium  |
|  | Created:      | 11/13/2018 5:23:24 PM   |
|  | Last Updated: | 11/13/2018 5:25:55 PM   |

|   |               |  |
|---|---------------|--|
| FunctionalRequirement Name:<br>44884-1 SO: Consume SDC "Get"<br>Workflow APIs |               |  |
|   | Notes:        | <p>SO to add recognition of Distribution Artifact notification over DMaaP when a new Workflow is available.<br/>SO to consume SDC APIs to retrieve new workflow Meta Data and WF BPMN artifact that are stored as an independent entities (vs. in the context of vNF or Service) in SDC using a new Get WF Metadata API and an enhanced Generic Artifact API to be provided by SDC.</p> <p>Workflow BPMN is stored Camunda BMPN 2.0 format with a unique identifier assigned by SDC.</p> |
|   | Key word:     | MSO  |
|   | Status:       | Proposed   |
|   | LOE:          | Easy   |
|   | Created:      | 11/12/2018 2:17:26 PM  |
|   | Last Updated: | 11/21/2018 1:37:03 PM  |

|   |  |  |
|---|--|--|
| FunctionalRequirement Name: 44884-2<br>VID: Get Available Workflows |  |  |
|---|--|--|

|  |               |   |
|--|---------------|---|
|  | Notes:        | <p>VID to obtain and display all available, user created workflows and SO Native workflows to the user for the selected vNF_Type/Version model using the new SO WF Get/Search API.</p> <ul style="list-style-type: none"> <li>• VID to mark User created workflows that are noted as tested/certified in the vNF Type/Version model</li> <li>• VID to mark the generic SO native workflows</li> <li>• VID to mark all other workflows as available but not certified.</li> </ul> <p>Remove requirement to associate workflow with vNFType/version in the VID table.</p> <p>Human readable Workflow Name (unique) and Description are displayed.<br/>Only the latest workflow version is valid in this release.</p> <p>Note that certified/tested workflows are stored at the vNF level in the vNF Model and not at the Service Level.</p> |
|  | Keyword:      | VID   |
|  | Status:       | Proposed  |
|  | LOE:          | Easy  |
|  | Created:      | 11/12/2018 2:17:23 PM   |
|  | Last Updated: | 11/13/2018 5:46:16 PM   |

|   |               |  |
|---|---------------|--|
| FunctionalRequirement<br>Name: 44884-3 VID:<br>Obtain WF Input Values |               |  |
|   | Notes:        | <p>Consume WF input parameters from the workflow metadata data</p> <ul style="list-style-type: none"> <li>• Interpret WF inputs that require user input</li> <li>• Display WF inputs with it's description to the user.</li> <li>• Accept user values for inputs. <ul style="list-style-type: none"> <li>- VID to allow a user to select one or more vFModules for HEATStack Update. VFModule Parameter types to be communicated by SO for VID development.</li> <li>- VID already has</li> <li>-Package inputs in WF request</li> <li>- OoS WF outputs</li> </ul> </li> <li>• OoS Interpret WF inputs that are vNF properties that VID needs to extract from the model and display to user (display only),</li> </ul> <p>VID to support the ability to present inputs to the user and apply smart/complex controls or functions for display based on the modeling of workflow data types. Unknown/new workflow input data types require VID development.<br/>See G. Harel presentation on VID Parameter Design for supporting explanation.<br/>Workflows and building block Data Types to be supported are listed in 44912-5. Note: all Activities/BBs are at the vNF level except for VFModule HeatStack Update.</p> <p>Parameter names to be displayed as per UX expert recommendation. The parameters names are defined at design time in ASDC for user designed workflows and MSO for Native workflows (e.g. choice of wording, capitalization, punctuation etc.) with an input parameter description so that the user fully understands what is required. Parameter units are to be displayed to the user.</p> <p>Target desired solution is for parameters to be consumed by VID and displayed to user in a generic manner that requires one time development for the parameter type versus development whenever a new building block requires user inputs of a known type.</p> |
|   | Keyword:      | VID  |
|   | Status:       | Proposed   |
|   | LOE:          | Moderate   |
|   | Created:      | 11/12/2018 2:17:14 PM  |
|   | Last Updated: | 11/12/2018 4:54:36 PM  |

|   |  |  |
|---|--|--|
| Requirement Name: 44884-5<br>SO: Get Workflows & Meta<br>Data API |  |  |
|---|--|--|

|  |               |   |
|--|---------------|---|
|  | Notes:        | <p>-SO to develop a new API that allows VID to obtain the list of available tested/certified workflows for the vNF Type/Version Selected and the MetaData for the user selected workflow.</p> <ul style="list-style-type: none"> <li>• Get Workflows API: Returns workflow Name, WF Reference, WF UUIDs and workflow description.</li> <li>• -Get Workflow MetaData API: Returns user input parameter names and descriptions.</li> <li>• Output parameters are OoS.</li> <li>• SO to provide all executable workflows that are deployed</li> <li>• Indicate which WFs are tested/certified for the vNF type/Version. Tested workflows are stored in the vNF Model.</li> <li>• Non-Tested/certified workflows are provided and VID will ask the user to attest to them being tested.</li> <li>• SO to include the certified Native CM workflows for the vNF type/version (<b>Do we want them marked as such?</b>).</li> <li>• SO to obtain the certified workflows from the vNF-Model.</li> </ul> <p>SO is the temporary WF Run Time Catalog (RTC).</p> <p>NOTE: There was much discussion with SDC, SO, E2E SE and the Architecture team. A conscious decision was made to have SO act as the temporary RTC for workflows. This capability will be moved when the actual Run Time Catalog (RTC) is available where VID will then obtain Workflow MetaData from the RTC.</p> |
|  | Keywords:     | VID, A&AI   |
|  | Status:       | Proposed  |
|  | LOE:          | Easy  |
|  | Created:      | 11/12/2018 2:17:28 PM   |
|  | Last Updated: | 11/13/2018 5:43:47 PM   |

|   |               |  |
|---|---------------|--|
| Requirement Name: 44884-6 VID-SO: Enhance Workflow Req. (Instantiation API) |               |  |
|   | Notes:        | Existing Instantiation API presently utilized for the Workflow Request to be modified to be more flexible to handle complex data types requiring user entry. |
|   | Keywords:     |  |
|   | Status:       | Proposed   |
|   | LOE:          | Easy   |
|   | Created:      | 11/12/2018 2:17:25 PM  |
|   | Last Updated: | 11/12/2018 4:48:25 PM  |

|   |               |   |
|---|---------------|---|
| Requirement Name: 44884-7 SDC: Workflow Distribution Notification |               |   |
|   | Notes:        | <p>Distribute the workflow (If workflow is made an independent artifact, otherwise, no change required.)</p> <ul style="list-style-type: none"> <li>• Use DMaaP topic similar to service topic for workflow distribution to SO (AID to determine if a new or existing can be used).</li> <li>• SDC to publish the distribution notification to DMaaP for a new user designed WF.</li> </ul> <p>Note: When the Run Time Catalog(RTC) becomes available, SDC will publish the user designed Workflow Definition and BPMN to the RTC. Upon receiving the distribution notification, SO will obtain the Workflow Definition and BPMN artifact from the RTC.</p> |
|   | Keywords:     |   |
|   | Status:       | Proposed  |
|   | LOE:          | Easy  |
|   | Created:      | 11/12/2018 2:17:23 PM   |
|   | Last Updated: | 11/12/2018 4:31:25 PM   |



|  |               |   |
|--|---------------|---|
| Requirement Name: 44884-13 VID Display WF Name and Description |               |   |
|  | Notes:        | <p>-VID to display the Human Readable WF Name and WF description when displaying the list of available workflow names for the selected vNF type/Version model.</p> <ul style="list-style-type: none"> <li>• Display tested/certified workflows for the vNF_Type/Version in alpha order:</li> <li>• User is given a list of all available workflows obtained from SO that are marked into categories and listed by category order then in alpha order: Categories are:               <ol style="list-style-type: none"> <li>1. Tested/certified for the chosen vNF type/Version,</li> <li>2. Native MSO workflow.</li> <li>3. Available not certified for vNF type/Version</li> </ol> </li> </ul> <p>VID will also support a way for the user to search the drop down list of available workflows. (e.g. as the user types, the drop list is filtered.)</p> <p>The WF description continues to be displayed once the user selects a workflow to execute.</p> |
|  | Keyword:      |   |
|  | Status:       | Proposed  |
|  | LOE:          | Easy  |
|  | Created:      | 11/12/2018 2:17:27 PM   |
|  | Last Updated: | 11/13/2018 5:47:14 PM   |

|   |                |   |
|---|----------------|---|
| Requirement Name: 44884-14 SDC: Certify WF-vNF Pair |                |   |
|   | Notes:         | <p>ASDC will follow the existing certification and governance processes used for Service to certify a workflow associate it with a vNF Type/Version.</p> <p>ASDC to include the WF name and identifiers in the TOSCA model for the vNF_Type/version using the workflow designer capability to create an operation and map the workflow and vNF_Type/version to the operation.</p> <p>Using the existing Service Model certification process for a workflow and association to a vNF type/version is <u>optional</u> for the user.</p> |
|   | Keyword:       |   |
|   | Status:        | Proposed  |
|   | LOE:           | Easy  |
|   | Create d:      | 11/12/2018 2:17:22 PM   |
|   | Last Updat ed: | 11/13/2018 5:17:23 PM   |

|  |               |   |
|--|---------------|---|
| Requirement Name: 44884-15 VID: Get WF Meta Data |               |   |
|  | Notes:        | <ul style="list-style-type: none"> <li>• VID obtains WF Meta data from SO to obtain required user inputs for the selected WF.</li> <li>• VID to also obtain the reference to the WF BPMN.</li> <li>• VID to support both simple and complex workflow input data types such as nested arrays.</li> <li>• Output parameters are OoS.</li> </ul> |
|  | Keyword:      |   |
|  | Status:       | Proposed  |
|  | LOE:          | Moderate  |
|  | Created:      | 11/12/2018 2:17:20 PM   |
|  | Last Updated: | 11/12/2018 5:06:29 PM   |

|   |  |  |
|---|--|--|
| Requirement Name: 44884-16 SDC: Develop WF API Search & Get WFs Operation |  |  |
|---|--|--|

|  |               |  |
|--|---------------|--|
|  | Notes:        | <p>Develop new WF API to Enable an SDC WF Editor to obtain a list of all user designed workflows with the workflow description. The purpose of this is to allow the user to select and modify a workflow</p> <p>NOTE: In this release, a user can modify the implementation of a workflow but cannot modify the WF input/outputs. A designer must save the workflow under a different name as a new WF for unrestricted editing. Dependent on Copy/Save WF requirement.</p> <p>Note: When the Run Time Library (RTL) becomes available, SDC will store and retrieve distributed workflows to/from the RTL.</p> |
|  | Keyword:      |  |
|  | Status:       | Proposed   |
|  | LOE:          | Medium   |
|  | Created:      | 11/12/2018 2:17:20 PM  |
|  | Last Updated: | 11/12/2018 4:38:01 PM  |

|  |               |  |
|--|---------------|--|
| Requirement Name: 44884-18 SDC: Copy/Save Workflow |               |  |
|  | Notes:        | Allow a user to copy an existing workflow, save it to a new name and subsequently modify it. |
|  | Keyword:      |  |
|  | Status:       | Proposed   |
|  | LOE:          | Medium   |
|  | Created:      | 11/12/2018 2:17:13 PM  |
|  | Last Updated: | 11/12/2018 4:38:25 PM  |

|   |               |  |
|---|---------------|--|
| Requirement Name: 44884-19 SDC Store Workflow as Independent Artifact |               |  |
|   | Notes:        | <p>SDC workflow designer will store the workflow BPMN as independent artifacts and assign a UUID and invariant UUID.</p> <p>Note: In Casablanca, workflows are stored in TOSCA CSAR.</p> |
|   | Keyword:      |  |
|   | Status:       | Proposed   |
|   | LOE:          | Medium   |
|   | Created:      | 11/12/2018 2:17:26 PM  |
|   | Last Updated: | 11/12/2018 4:36:23 PM  |

|   |          |  |
|---|----------|--|
| Requirement Name: 44884-22 SDC Enhance Generic Artifact API |          |  |
|   | Notes:   | <p>Enhance Generic Artifact API to allow SO to extract the WF BPMN and associated Meta Data based on the workflow UUID. (Required if WF is made an independent artifact).</p> <p>Intended to be used by SO after receiving a notification that there is a new user created workflow available.</p> <p>MetaData includes:</p> <ol style="list-style-type: none"> <li>1. Human Readable WF Name and Description</li> <li>3. Reference to WF BPMN (independent artifact)</li> <li>4. Deferred: Human readable outputs and description</li> </ol> <p>Note: When the Run Time Library (RTL) becomes available, SDC will publish the WF BPMN artifact to the RTL and SO will obtain it from the RTL.</p> |
|   | Keyword: |  |
|   | Status:  | Proposed   |
|   | LOE:     | Easy   |
|   | Created: | 11/12/2018 2:17:19 PM  |

|  |               |                        |
|--|---------------|------------------------|
|  | Last Updated: | 11/20/2018 11:27:41 AM |
|--|---------------|------------------------|

|   |               |   |
|---|---------------|---|
| Requirement Name: 44884-24 VID: Enhance Schedule WF API |               |   |
|   | Notes:        | <p>Dependent on Scheduler being pushed to ONAP by AT&amp;T.</p> <ul style="list-style-type: none"> <li>Flexibility enhancements required to the Scheduler API to accommodate User designed workflow input parameters in the workflow execution request.</li> </ul> <p>Sending WF request to Scheduler (via Portal) is BAU as the parameters are in the payload.</p> |
|   | Keyword:      |   |
|   | Status:       | Proposed  |
|   | LOE:          | Easy  |
|   | Created:      | 11/12/2018 2:17:18 PM   |
|   | Last Updated: | 11/13/2018 5:39:06 PM   |

|   |               |  |
|---|---------------|--|
| Requirement Name: 44884-25 SDC Enhance TOSCA Parser |               |  |
|   | Notes:        | <p>Enhance vNF TOSCA Parser to extract workflow references from the vNF model.</p> <p>Remove capability to extract WF from CSAR.</p> |
|   | Keyword:      |  |
|   | Status:       | Proposed   |
|   | LOE:          | Medium   |
|   | Created:      | 11/12/2018 2:17:13 PM  |
|   | Last Updated: | 11/12/2018 4:32:43 PM  |

|   |               |  |
|---|---------------|--|
| Requirement Name: 44884-27 VID: UX Enhancement Requests |               |  |
|   | Notes:        | <p>Provide search and filtering tools that allow a user to pinpoint the list of vNF instances they want to perform an operation on.</p> <p>The following list of requirements are "Nice to have's" in this release and implementation is dependent on VID resources. The functional requirements supporting workflow scheduling and execution take precedence as UX improvements are technically out of scope for this project.</p> <ul style="list-style-type: none"> <li>A select "All" choice for vNF instances with ability to deselect unwanted instances. Select one instance type and auto-filter to only show instances of that type</li> <li>Display the human readable vNF Model Version versus the Model Version UUID. For example, display 2.0 instead of eeeeffaabb0gghhee.</li> <li>Removed: Ability to highlight multiple vNF instances e.g. hold down control while making mouse clicks to highlight more than one, with the ability to deselect - Interface to be changed to check boxes.</li> <li>Removed: When entering workflow data and the user clicks outside the box, the data they already entered will not be lost and will be displayed. Modify to maintain entered data.- UI changing and will not have a pop-up box.</li> </ul> |
|   | Keyword:      |  |
|   | Status:       | Proposed   |
|   | LOE:          | Easy   |
|   | Created:      | 11/12/2018 2:17:25 PM  |
|   | Last Updated: | 11/12/2018 5:01:06 PM  |

Prioritized Activities/Building Blocks to be Developed

## Prioritized Activities/Building Blocks to be Developed

Version 1.0, Author:CR2431

Created on 11/12/2018. Last modified 11/12/2018.



### Prioritized Activities/Building Blocks to be Developed

| Building Block /Activities Name    | D ub lin Pri ori ty | Description   |
|------------------------------------|---------------------|---|
| ChangeModelServiceInstanceBB       | 4?                  | Call SDN-C ChangeAssign   |
| Remove?? ModelAdminChangeUpdateBB  | ?                   | Update service-instance object in A&AI (update model info). Requested by vProbes. Can they execute InPlaceSWUpdate with aDummy/stub Ansible script?   |
| AAIUpdateServiceModelVersion (New) | 1                   | CONCEPT: Need building block(s) to update the model (Service, Module, vNFC) version in A&AI due to an administrative change made to the model in ASDC such as a license renewal. MSO should perform a "diff" of all administrative "properties" of the model and only make the version update if those have changed. The base requirement is that use of the this building block needs to be restricted to non-functional model updates i.e. cannot be used due to a SW update. |
| AssignVnfBB                        | 4                   | Update the Service model version ID in A&AI to match the ASDC service version due to an ASDC model administrative or external Service update  |
| UnassignVnfBB                      | 4                   | Create generic-vnf object in A&AI, orchestration-status = Inventoried   |
| ActivateVnfBB                      | 4                   | Call SDN-C Assign   |
| DeactivateVnfBB                    | 4                   | Update generic-vnf object in A&AI, orchestration-status = Assigned  |
| ChangeModelVnfBB                   | 1                   | Call SDN-C Unassign   |
| AAICheckVnfInMaintBB               | 1                   | Delete generic-vnf object in A&AI   |
| SDNOVnfHealthCheckBB               | 4 /5?               | Call SDN-C Activate   |
| GenericVnfHealthCheckBB            | 6                   | Update generic-vnf object in A&AI, orchestration-status = Active  |
| UpdatevNFModelVersion (New)        | 1                   | Call SDN-C Deactivate   |
| AssignVfModuleBB                   | 4                   | Update generic-vnf object in A&AI, orchestration-status = Assigned  |
| UnassignVfModuleBB                 | 4                   | Call SDN-C ChangeAssign (change model)  |
| ActivateVfModuleBB                 | 4                   | Update genric-vnf object in A&AI  |
| DeactivateVfModuleBB               | 4                   | Get generic-vnf object in-maintenance attribute   |
| ChangeModelVfModuleBB              | 1                   | Send VNF health diagnostic request message to SDN-O   |
| CreateVfModuleBB                   | 4                   |   |

|                           |   |  |
|---------------------------|---|--|
| DeleteVfModuleBB          | 4 | Update the Resource model version ID in A&AI to match the ASDC service version due to an ASDC model administrative or external Resource update |
| HeatStackUpdateVfModuleBB | 3 | Create vf-module object in A&AI, orchestration-status = Inventoried  |
| ConfigurationScaleOutBB   | 6 | Call SDN-C Assign  |
| Pause for Manual Task     | 1 | Update volume-group object in A&AI, orchestration-status = Assigned  |
| CreateVolumeGroupBB       | 4 | Call SDN-C Unassign  |
| DeleteVolumeGroupBB       | 4 | Delete vf-module object in A&AI  |

## Solution

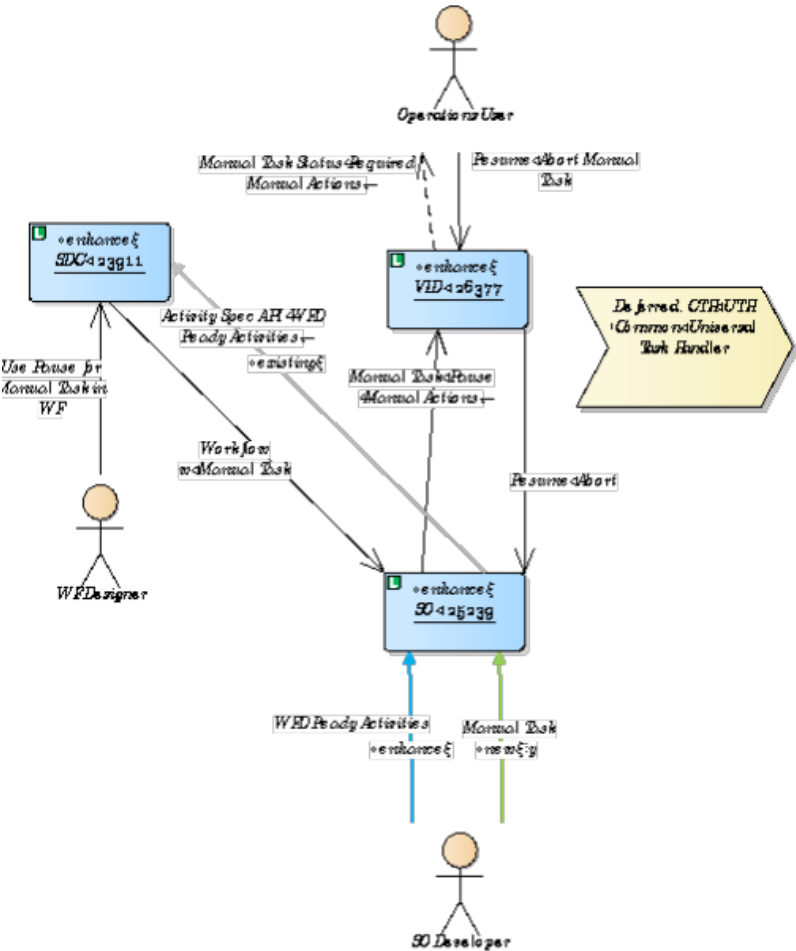
*Package in package '44911 -Activity/BB Enhancements'*

Solution

Version Phase 1.0 Proposed

CR2431 created on 11/12/2018. Last modified 11/12/2018

44911 Activity/BB Enhancements diagram



44911 Activity/BB Enhancements

Operations User

|                             |               |                       |
|-----------------------------|---------------|-----------------------|
| Actor Name: Operations User |               |                       |
|                             | Stereotype:   |                       |
|                             | Complexity:   | Easy                  |
|                             | Notes:        |                       |
|                             | Last Updated: | 11/12/2018 2:17:41 PM |

SO Developer

|                          |             |      |
|--------------------------|-------------|------|
| Actor Name: SO Developer |             |      |
|                          | Stereotype: |      |
|                          | Complexity: | Easy |

|  |               |  |
|--|---------------|--|
|  | Notes:        | <ul style="list-style-type: none"> <li>• Develop "Pause" for Manual Task Activity</li> <li>• Make all Activities required for in scope workflows WF Designer Ready</li> <li>• Enhance all Activities to use GR-API (where required)</li> </ul> |
|  | Last Updated: | 11/14/2018 4:30:47 PM  |

## WF Designer

|                         |               |                       |
|-------------------------|---------------|-----------------------|
| Actor Name: WF Designer |               |                       |
|                         | Stereotype:   |                       |
|                         | Complexity:   | Easy                  |
|                         | Notes:        |                       |
|                         | Last Updated: | 11/12/2018 2:17:41 PM |

## SDC

|                  |               |  |
|------------------|---------------|--|
| Object Name: SDC |               |  |
|                  | Stereotype:   | «enhance»  |
|                  | Complexity:   |  |
|                  | Notes:        | <p>Service Design and Creation</p> <p><b>Impacts</b></p> <ul style="list-style-type: none"> <li>• Activity Specification API developed in Beijing/Casablanca to accept the Manual Task Activity.</li> <li>• When the manual task is used in the workflow, the WF Editor forces the user to enter a description of the manual tasks to be performed. That will then be passed to the user.</li> </ul> |
|                  | Last Updated: | 11/13/2018 5:57:48 PM  |

## SO

|                 |             |           |
|-----------------|-------------|-----------|
| Object Name: SO |             |           |
|                 | Stereotype: | «enhance» |
|                 | Complexity: | Easy      |

|  |               |  |
|--|---------------|--|
|  | Notes:        | <p>Service Orchestrator</p> <p><b>Impacts</b></p> <p>1) Make all Activities required for in scope workflows WF Designer Ready</p> <ul style="list-style-type: none"> <li>Enhance all Activities to use GR-API (where required)</li> </ul> <p>In Scope Workflows:</p> <ol style="list-style-type: none"> <li>In Place SW Update vNF level</li> <li>HeatStack Update vNF level</li> <li>HeatStack Update vModule level</li> <li>Config Update vNF level</li> <li>Delete and Build SW Update vNF level</li> </ol> <p>A list of Activities is included after the requirements section. This list may not be inclusive of activities required as modifications may have occurred after this document was issued. SO developers are expected to ensure that all Activities are made available.</p> <p>-2) Develop the pause for manual action(s) "Activity"</p> <ul style="list-style-type: none"> <li>Push new SO developed Activities to SDC using Activity Spec API</li> <li>Provide status upon request to VID that the workflow is paused for manual task and instructions to the user on what actions to take.</li> <li>Allow the user to either resume the workflow or abort the workflow. if the user aborts the workflow, NO Trouble ticket is issued.</li> </ul> |
|  | Last Updated: | 11/14/2018 4:19:25 PM  |

## VID

|                     |               |  |
|---------------------|---------------|--|
| Object Name:<br>VID |               |  |
|                     | Stereotype:   | «enhance»  |
|                     | Complexity:   | Easy   |
|                     | Notes:        | <p>Virtual Infrastructure Deployment</p> <p><b>Impacts</b></p> <p>– User requests WF status.</p> <ul style="list-style-type: none"> <li>When WF is in Manual Task Status, VID displays the manual actions to be performed as defined by the user who designed the WF.</li> <li>The manual actions to be performed are passed to VID from SO. <ul style="list-style-type: none"> <li>Allow user to resume or abort workflow after Pause for manual intervention. .</li> </ul> </li> </ul> |
|                     | Last Updated: | 11/13/2018 5:55:36 PM  |

## Deferred: CTH/UTH -Common/Universal Task Handler

|  |               |  |
|--|---------------|--|
| Process Name: Deferred: CTH/UTH -Common/Universal Task Handler |               |  |
|  | Stereotype:   | «process»  |
|  | Complexity:   | Easy   |
|  | Notes:        | <p>Defer -Locate System where MSO can invoke an API to instruct a "team" to perform a required task.</p> <p>Does Ops use this system or other system for task handling?</p> <p>Steve Katz: Obtain contact for worklist system.</p> |
|  | Last Updated: | 11/12/2018 2:17:43 PM  |

## 44911 Activity/BB Enhancements diagram

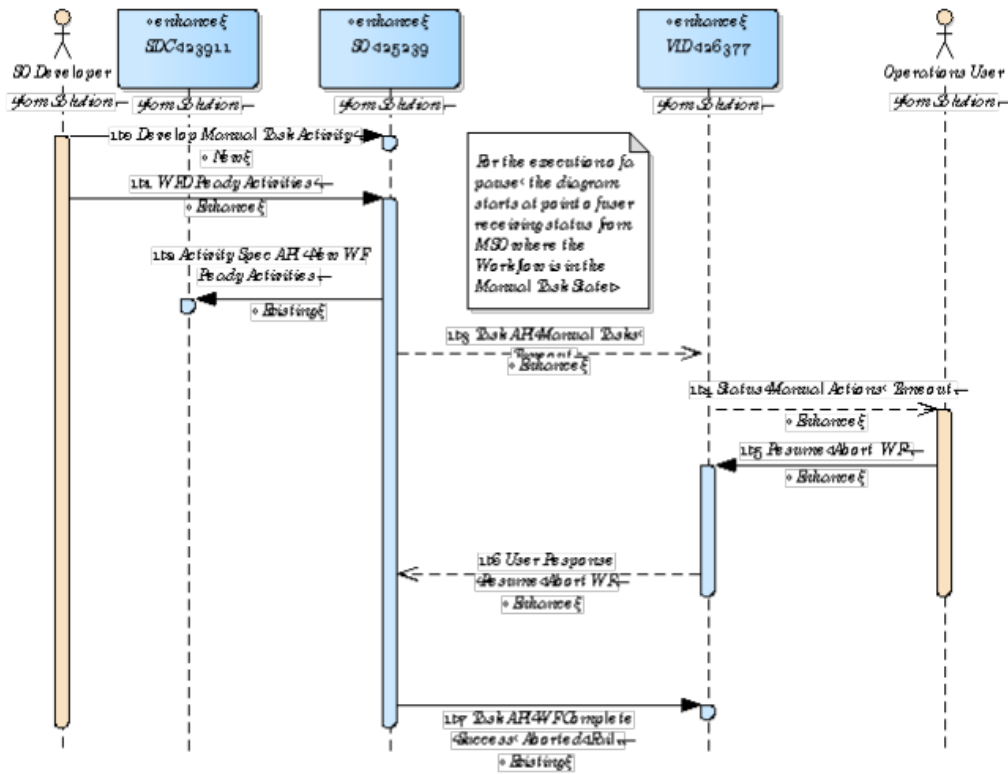


Interaction diagram in package 'Interactions'

44911 Activity/BB Enhancements

Version 1

CR2431 created on 11/12/2018. Last modified 11/14/2018



Name: 44911 Activity/BB Enhancements

Author: CP431

Version: 1

Created: 11/12/2018 12:00:00 AM

Updated: 11/14/2018 4:54:17 PM

44911 Activity/BB Enhancements

Solution

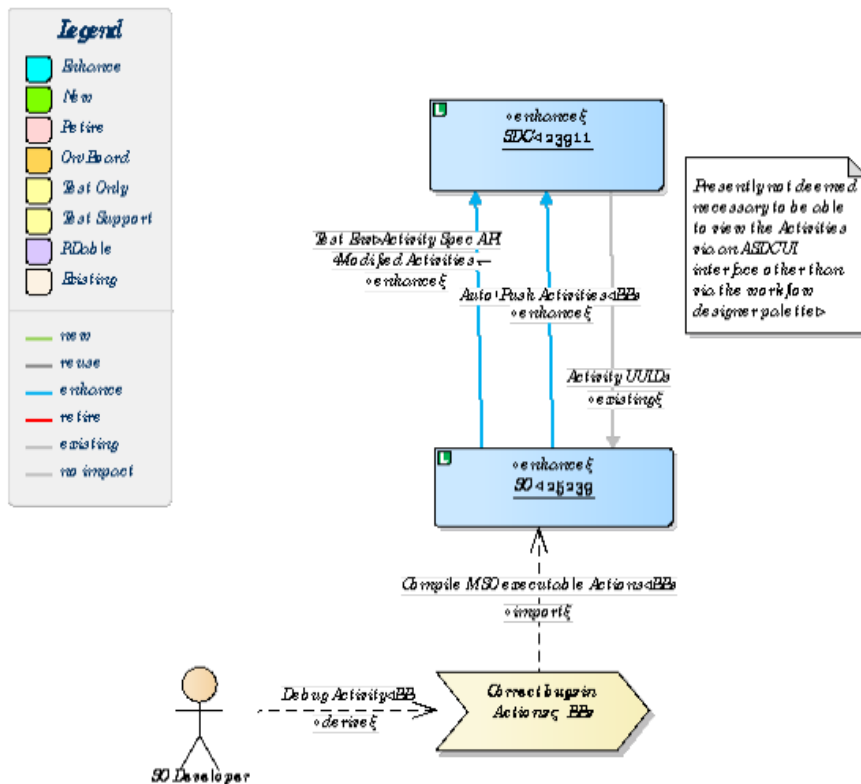
## Enhance Activity Spec Restrictions diagram

Analysis diagram in package 'Solution'

Enhance Activity Spec Restrictions

Version 1

CR2431 created on 11/12/2018. Last modified 11/14/2018



Name: Enhance Activity Spec Restrictions  
 Author: CR2431  
 Version: 1  
 Created: 11/12/2018 12:00:00 AM  
 Updated: 11/14/2018 3:53:36 PM

Enhance Activity Spec Restrictions

## SO Developer

|                          |               |   |
|--------------------------|---------------|---|
| Actor Name: SO Developer |               |   |
|                          | Stereotype:   |   |
|                          | Complexity:   | Easy  |
|                          | Notes:        | Impacts <ul style="list-style-type: none"><li>• Debug Workflow Activities</li><li>• Compile Activities in MSO</li></ul> |
|                          | Last Updated: | 11/14/2018 3:45:14 PM   |

## SDC

|                  |               |  |
|------------------|---------------|--|
| Object Name: SDC |               |  |
|                  | Stereotype:   | «enhance»  |
|                  | Complexity:   | Medium   |
|                  | Notes:        | Service Design and Creation<br>Casablanca: Amdocs implemented the Activity Specification API for MSO to "push" Actions/BBs to the AT&T Activity Spec Service.<br><b>Impacts</b> <ul style="list-style-type: none"><li>• SDC to allow SO to overwrite an existing Activity in the Test Env. SO restricted to overwriting Activities for bug fixes.</li><li>• Allow a restricted user to remove Activities. This allows SO to push Activities that underwent a bug fix.</li></ul> <p>Note: If SO is trusted, SDC can simply allow SO to overwrite existing Activities.</p> <p>Out of Scope for this release</p> <ol style="list-style-type: none"><li>1. Allow MSO to overwrite an existing Activity/BB in Production.</li><li>2. Allow SO to change the inputs or outputs of an Activity/BB</li><li>2. Versioning of Activities</li></ol> |
|                  | Last Updated: | 11/14/2018 3:30:14 PM  |

## SO

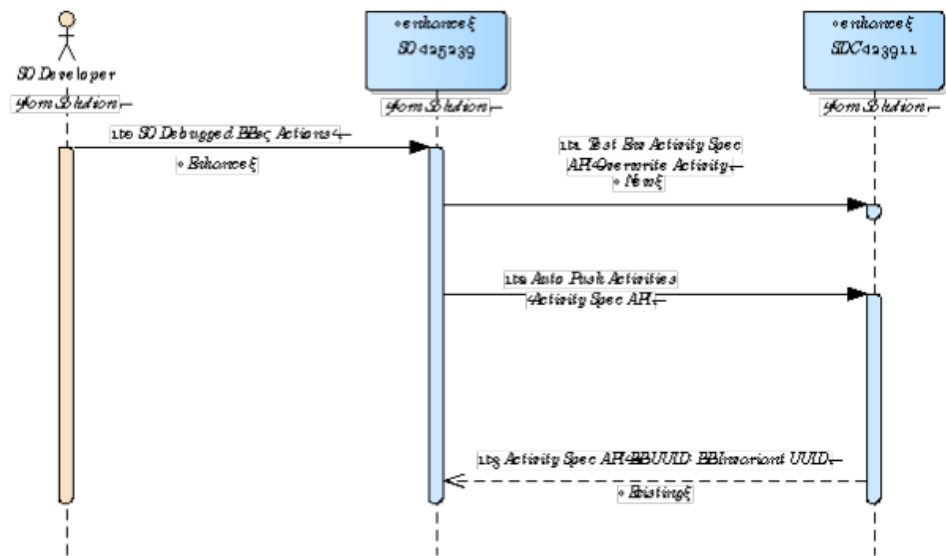
|                 |               |   |
|-----------------|---------------|---|
| Object Name: SO |               |   |
|                 | Stereotype:   | «enhance»   |
|                 | Complexity:   | Difficult   |
|                 | Notes:        | Service Orchestrator<br><b>Impacts</b> <ul style="list-style-type: none"><li>• SO will auto-push new activities to SDC</li></ul> <p>Note: Activities will not be versioned.</p> |
|                 | Last Updated: | 11/14/2018 3:37:19 PM   |

Correct bugs in Actions & BBs

|   |               |                                 |
|---|---------------|---------------------------------|
| Process Name: Correct bugs in Actions & BBs |               |                                 |
|   | Stereotype:   | «process»                       |
|   | Complexity:   | Easy                            |
|   | Notes:        | Correct bugs and test Activity. |
|   | Last Updated: | 11/14/2018 3:41:25 PM           |

Enhance Activity Spec Restrictions diagram

Interaction diagram in package 'Interactions'  
Enhance Activity Spec Restrictions  
Version 1  
CR2431 created on 11/12/2018. Last modified 11/14/2018

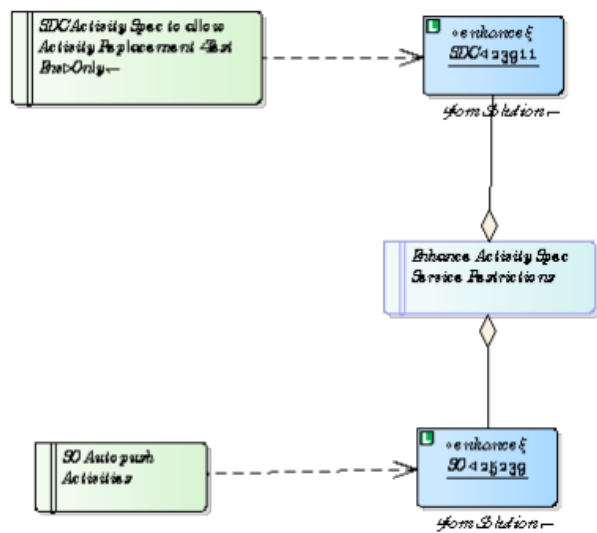


Name: Balance Activity Spec Restrictions  
Author: CR2431  
Version: 1  
Created: 11-12-2018 12:00:00 AM  
Updated: 11-14-2018 3:54:02 PM

Enhance Activity Spec Restrictions

Requirements

Enhance Activity Spec Restrictions



Name: Enhance Activity Spec Restrictions  
Author: CR2431  
Version: 1  
Created: 11/14/2018 12:00:00 AM  
Updated: 11/14/2018 4:02:05 PM

Enhance Activity Spec Restrictions

|  |                  |   |
|--|------------------|---|
| Requirement Name: SO Autopush Activities |                  |   |
| Notes:                                   | Not es:          | SO to AutoPush Activities to SDC using Activity Spec API upon SO startup. In the Test Env., SDC to allow for Activity overwrite.<br>In Production, SO to Autopush all Activities to SDC at SO Startup. SO to ignore SDC warning messages. SO may only update the functionality of the Activity in the production environment to the extent that the update is solely internal to SO. Inputs/Outputs or anything that will impact the Activity for use in the WF Designer may not be updated at this time. (Activity update in SDC is Out of Scope). |
| Keyword:                                 | Ke yw ord:       |   |
| Status:                                  | Sta tus:         | Proposed  |
| LO E:                                    | LO E:            | Medium  |
| Created:                                 | Cre ate d:       | 11/14/2018 4:00:44 PM   |
| Last Updated:                            | Las t Up dat ed: | 11/21/2018 1:47:17 PM   |

|  |               |   |
|--|---------------|---|
| Requirement Name: SDC Activity Spec to allow Activity Replacement (Test Env. Only) |               |   |
|  | Notes:        | SDC Activity Spec API, to allow SO to push modified activities to SDC. in the test environment. This is used solely for bug fixes.<br><br>Modified Activities must have the same identifier as the previous one and the previous version should no longer be available to the user. |
|  | Keyword:      |   |
|  | Status:       | Proposed  |
|  | LOE:          | Medium  |
|  | Created:      | 11/12/2018 2:18:10 PM   |
|  | Last Updated: | 11/21/2018 1:43:35 PM   |

|  |               |   |
|--|---------------|---|
| Requirement Name: OoS ASDC: ModifyActivity Operation |               |   |
|  | Notes:        | Out of Scope<br>Automate verwriting and storing a modified activity over it's previous version. Only the newest version of an activity is usable.<br><br>If the CreateActivity operation of the Activity Spec API cannot be utilized for this purpose, ASDC is required to develop a ModifyActivity operation.<br><br>Discussions regarding the need to version activities is on-going, but out of scope. |
|  | Keyword:      |   |
|  | Status:       | Implemented   |
|  | LOE:          | Medium  |
|  | Created:      | 11/12/2018 2:18:13 PM   |
|  | Last Updated: | 11/14/2018 4:05:32 PM   |

## Information Model

### Information Model

#### Component Parameters

| Component 1 | Component 2 | Parameters  |
|-------------|-------------|---|
| VID         | SO          | Get list of all workflows with description.<br>Get Workflow Definition (Meta Data)  |
| VID         | User        | Display all available workflows. Allow the user to choose a Workflow.<br>Display the WF input parameters of the chosen workflow and accept the user's inputs. Ability to display and accept input for complex data types.<br>Display input parameter names with description and units (if applicable) required by the workflow to the user and accept the values entered by the user to be included in the WF payload delivered to SO (Use Instantiation or New API).<br><br>Give user instructions on manual activities to perform when the WF provides the "paused for manual task" status.<br><br>Provide option to Abort or resume WF when WF is in the paused for a manual task. |
| VID         | SO          | VID to pass the workflow input parameter/value pairs to SO.<br>VID to have ability to handle complex data types.  |
| SO          | VID         | Manual task status and activities to perform for manual task.<br>SO to have ability to accept complex data type inputs from VID.  |

|    |     |   |
|----|-----|---|
| SO | SDC | <p>If independent WF is implemented: Upon receipt of a new workflow artifact notification (over DMaaP), SO extracts the workflow definition (New API) and BPMN artifact from SDC artifact catalog using the Generic Artifact API.</p> <p>2. Push Activities to SDC Activity Spec Service using the Activity Spec API.</p> <p>3. Accept complex input data types for Activities.</p> |
|    |     |   |
|    |     |   |
|    |     |   |
|    |     |   |
|    |     |   |

### 7.3.2 API and Interface Dependencies and Specifications

Author: Linh Nguyen, Chris Rapposelli-Manzo

ASDC

| # | Interfacing Applications | API Name/Version                    | Existing /Enhanced /New | Impact Summary  |
|---|--------------------------|-------------------------------------|-------------------------|---|
| 1 | SDC – SDC<br>TBP by ONAP | WF API(search WF operation)         | New                     | SDC to develop a new API to allow the workflow designer to "search" the workflows for display to the user to choose a workflow to modify or to save as a new workflow to then modify. |
| 2 | SDC -SO                  | WF API (get WF meta data operation) | New                     | SDC to develop new API with an API-operation that allows SO to get the workflow meta data WF name, WF description, input /outputs with descriptions, reference to WF BPMN.            |
|   |                          | Generic Artifact API                | Enhance                 | SDC to enhance Generic Artifact API to allow SO to get the Workflow BPMN artifact.  |
|   |                          | Activity Spec API (for BB)          | New to MO               |   |
| 3 | SDC -DMaaP               | Distribution Notification           | Enhance                 | SDC publishes new WF notification to DMaaP.   |

VID

| # | Interfacing Applications | API Name /Version        | Existing /Enhanced /New | Impact Summary  |
|---|--------------------------|--------------------------|-------------------------|---|
| 1 | VID-SDC                  | Get vNF Model API        | Existing                | Enhance TOSCA parser and TOSCA model  |
|   |                          |                          |                         |   |
|   |                          |                          |                         |   |
|   |                          |                          |                         |   |
| 5 | VID-MSO                  | Instantiation or New API | Enhance or New          | Enhance existing Instantiation API or develop new API (Operation for WF Request) to support the WF parameters. Enhancement or new TBD during development.   |
|   |                          | Get/Search WF API        | New                     | Develop New API for VID to obtain the list of all certified/tested available workflows and workflow description. from SO. TBD during develop to or not to include MetaData as it will be slow and impact the user experience negatively.                              |
|   |                          | Get WF Definition API    | New                     | Develop New API for VID to obtain the WF Definition/MetaData of the user selected WF. MetaData includes user input parameters with descriptions, Includes Workflow Name, Identifiers. parameters VID must extract from other ECOMP components to display to the user. |
|   |                          | Instantiation or New API | Enhance or New          | Enhance response to VID for Status:<br>1. For manual task, add text for user instructions regarding the manual task to be performed.<br>2. For all status, include the NF_Role (from A&AI or TOSCA Model)   |
|   |                          | Instantiation or New API | Enhance or New          | Enhance or build new API for Rainy Day Handling of workflows to include user designed workflows. New or Enhance TBD during development.   |

SO

| # | Interfacing Applications | API Name /Version | Existing/Enhanced /New | Impact Summary   |
|---|--------------------------|-------------------|------------------------|--|
| 1 | SDC-SO via DMaaP         | Notification      | Enhance                | Receive Distribution Artifact notification from DMaaP (published by SDC) |

|   |        |  |                               |   |
|---|--------|--|-------------------------------|---|
| 2 | SO-SDC | Get WF API<br>Generic Artifact API                       | New<br>Enhance                | SO obtains new WF Definition/MetaData from SDC, includes reference to BPMN artifact.<br>MSO obtains WF BPMN   |
|   | SO-SDC | Activity Spec API  | Exists                        |   |
| 3 | SO-VID | Instantiation or New API<br><br>Instantiation API or New | Enhance or New<br><br>Enhance | VID sends to SO the WF request package (WF name UUIDs inputs/values meta data). Enhance or new TBD during development.<br><br>Enhance VID-SO Instantiation API for Rainy Day Handling. Enhance or new TBD during development.                       |
| 4 | SO-VID | Instantiation API or New                                 | Enhance                       | Enhance response to VID for Status:<br>1. For manual task, add text for user instructions regarding the manual task to be performed.<br>2. For all status, include the NF_Role (from A&AI or TOSCA Model)<br>Enhance or new TBD during development. |

## Parameters and IST Testing Sections

### IST Testing Requirements **DRAFT TO BE UPDATED**

#### IST Test Criteria and Preconditions

*Identify test criteria and preconditions for testing. Consider the Integrated Platform flows described earlier in Section 7 and any additional flows needed for backward compatibility testing. Requires inputs from IPSD Lead, Client Rep (e.g., from Greendyk, Medamana and/or Shannon org), ECOMP IST Tester (Josh Becker team), Client Test Teams (e.g., Jerry Leger team), D2 Integration Testing Rep (Deneen White team), and ECOMP Self-Serve Team (Stephanie Parlamas team).*

Author: TG784d, CR2431

#### **Project Success Criteria**

- A User can Design/create and successfully execute the following workflows yielding the outcome of the SO Native workflows that perform the same Change Management Operation at the vNF level:
  - In Place SW Upgrade,
  - Heat Stack Update at vNF Level
  - Heat Stack Update at vFModule Level
  - Delete and Build SW Update,
  - vNF Configuration Update.
- User can select a user designed workflow without manual tasks for a specified Service/vNF, enter parameters, submit the workflow for scheduling and the workflow should execute as designed.
- User creates workflow with manual tasks and chooses to execute that workflow. At the VID interface, the user verifies that the workflow pauses at the correct location in the workflow based on the description of manual tasks to perform (provided by SO) and then allows the user to abort or resume the workflow from that point via the VID interface.
- User creates workflow with manual tasks and chooses to execute that workflow. At the VID interface, the user verifies that the workflow pauses at the correct location based on the description of manual tasks to perform (provided by SO) and then allows the user to abort the workflow from that point via the VID interface.
- New Activities developed in SO including the Manual Task are successfully included in the Activity Specification in SDC by checking to see that they are available on the Workflow Designer Palette.

#### IST Test Use Cases

*Identify the test use cases for the proposed feature(s) identifying all the nodes that are involved in the system. Include the flows described in Section 6 and any additional flows needed for backward compatibility testing. Requires inputs from IPSD Lead, Client Rep (e.g., from Greendyk, Medamana and/or Shannon org), ECOMP IST Tester (Josh Becker team), Client Test Teams (e.g., Jerry Leger team), D2 Integration Testing Rep (Deneen White team), and ECOMP Self-Serve Team (Stephanie Parlamas team).*

Author: CR2431

Feature Use Cases Design Workflows: Note: ensure all Activities are utilized in the workflows designed.

- User to design a workflow in the SDC workflow designer with only input as vnf identification. Re-create SO Native workflows (In Place SW upgrade, Delete and Build SW upgrade, Modify Configuration, vNF HeatStack Update, vFModule Heatstack Update )
- User to design a workflow with user inputs other than vnf identification. Test by re-creating SO Native workflows (In Place SW upgrade, Delete and Build SW upgrade, Modify Configuration, vNF HeatStack Update, vFModule Heatstack Update)

#### **Feature Use Cases Execute Workflows:**

- Distribute user designed workflows.
- Execute the user created workflow with the only input as vnf identification as per execution test case steps.



- Execute the user created workflow with inputs other than vnf identification as per execution test case steps.
- Execute SO Native workflows where all ansible playbooks are in place for the test vNF (In Place SW upgrade, Delete and Build SW upgrade, Modify Configuration, vNF HeatStack Update, vFModule Heatstack Update). Expect successful WF outcomes

Apply Testing use cases to at least one L4+ vNF that uses Chef and one that uses Ansible  
Insert error conditions into all test cases.

- - Attempt to execute In Place SW upgrade workflow on a vNF that does not have ansible playbooks. Should get error.
    - Select abort workflow for user designed workflows.
    - Select Rollback for Native SO workflows and check that the vNF is back to it's initial state and working properly.
  - Attempt to execute vNF HeatStack Update on a vNF that was not instantiated with vFModules. This should fail.
    - Select abort workflow for user designed workflows.
  - Select Rollback for Native MSO workflows and check that the vNF is back to it's initial state and working properly.
  - Other error conditions to be inserted are
    - an unhealthy vNF. User can choose to skip the activity and continue the WF to fix the vNF.
    - Need input from team.
- Execution Test Case Steps includes Testing Feature 44910:
  - VID displays workflow initiation screen to user (exists) with the list of available workflows and description of the each workflow.
  - Workflows associated to the vNF type/version in the vNFs SDC model are displayed by VID and SO Native workflows are marked and displayed.
  - VID displays workflow parameters with description to collect values from user
  - VID accepts parameter values entered by the user for the selected workflow
  - VID user schedules the WF and accepts a schedule.
  - If scheduler pushed to ONAP, Request status prior to the scheduled time and ensure that the correct and complete data is displayed in the status
  - Workflow should complete successfully as designed, maint and closed loop disabled flags reset.
  - For L4-7 use VCOM to test.
  - For L3 use VCE only if Initiative 6.7.3 is implemented in the 1810 release.

#### Feature "Pause for Manual Step" Use Case

- Include Pause for Manual Step in one location of one of the user designed workflows.
- Include Pause for Manual Step in multiple locations of one of the user designed workflows.

## IST Self-Serve Flow Test Cases

*Identify the Self-Serve test use cases for the proposed feature(s) and for backward compatibility testing identifying all the nodes that are involved in the system. Include the flows described in Section 6 and any additional flows needed for backward compatibility Self-Serve flow testing. Requires inputs from IPSD Lead, Client Rep (e.g., from Greendyk, Medamana and/or Shannon org), ECOMP IST Tester (Josh Becker team), Client Test Teams (e.g., Jerry Leger team), D2 Integration Testing Rep (Deneen White team), and ECOMP Self-Serve Team (Stephanie Parlamas team).*

Author: SK1692

TO BE PROVIDED

## Development and Test Environment Needs

*Identify the IST Test Environment requirements based on the Self-Serve test use cases for the new capabilities being delivered and for backward compatibility testing. Requires inputs from IPSD Lead, Client Rep (e.g., from Greendyk, Medamana and/or Shannon org), ECOMP IST Tester (Josh Becker team), Client Test Teams (e.g., Jerry Leger team), D2 Integration Testing Rep (Deneen White team), ECOMP Self-Serve Team (Stephanie Parlamas team), and TESP Rep (Jonathan Roll team/Isabella Szutkowski).*

Author: Robin Kimble (RK2369)

### Development Lab Needs:

| Application | Development Lab Resource Request                      | Dev POC        | Notes |  |  |  |
|-------------|---|----------------|-------|--|--|--|
| SO          | No special needs                                      |                |       |  |  |  |
| VID         | No special needs                                      |                |       |  |  |  |
| APPC        | No special needs                                      |                |       |  |  |  |
| SDNC        | No info provided yet                                  |                |       |  |  |  |
| SDC         | Minimum VM with 2 VCPUs, 4 GB RAM & Storage of 20GB-- | Srini Vellanki |       |  |  |  |

### IST Environment Needs:

Author: CR2431

At least one Ansible, one Chef and NetConf L3 and L4-7 vNFs with all supported ansible/chef/Netconf script books must be available and active in the test environment. The vNFs must have an assigned Ansible/chef/Netconf server. Note: vNFs must be non-complex e.g. not like vProbes.

At least one NetConf Layer 3 vNF must be available and active in the test environment. The vNFs must have an assigned Netconf/Ansible/chef server.

Note: vNFs must be non-complex e.g. not like vProbes.

At least one Netconf server, one Ansible server and one chef server loaded with the required script books must be available in the test environment. Netconf/Ansible/Chef server assignment and retrieval features must be fully implemented for testing.

- If no vNFs are using one of the stated protocols (Chef or Netconf), that protocol will be tested at the time it is onboarded.

## VNFs/Services Available and Required for Testing

*Identify example data to use for Self-Serve test use cases. Requires inputs from Client reps and Client test teams (e.g., Greendyk, Medamana).*

Author: CR2431, DC2964

Required: User to create SDC designed workflows to test at least one Ansible and one Chef L4+ and one NetConf L3 vNFs each (3 vNFs total).

Ansible (to be confirmed) vNFs that can be used for testing:

vMMSC (Mobility L4+)

vCCF (VoIP L4+)

vRAR (VoIP L4+)

- vCOM (VoIP L4+)
- Tentative
  - vDBE

VCE - Requires ADIOD API consolidation completion and scripts available

SDWAN: VHNGW, VHNPortal

Tentative NetBond vFNAT, NetBond vRNAT

Chef vNFs that can be used for testing:

Tentative - vShaken (VoIP L4+, used to prevent Robo calls)

Tentative - vIRC (VoIP L4+)