SAP CLOUD PLATFORM | EXTERNAL

Configuration & User Guide

Capital Expenditure Approval Process

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Overview

This document provides information about what needs to be configured to make the Live Process Package Capital Expenditure Approval (CAPEX) Process run. The main audience of this document are IT administrators, developers, LOB experts, and product owners. The document describes what needs to be done to make the solution run.

The live process content package enables customers to accelerate the digitalization of their capital investment approval in a transparent way and provide flexibility to meet business requirements. It includes processes, decisions and visibility scenario content enabling customers to flexibly configure process variants in a low-code to no-code approach.

Capital Expenditure Approval Process
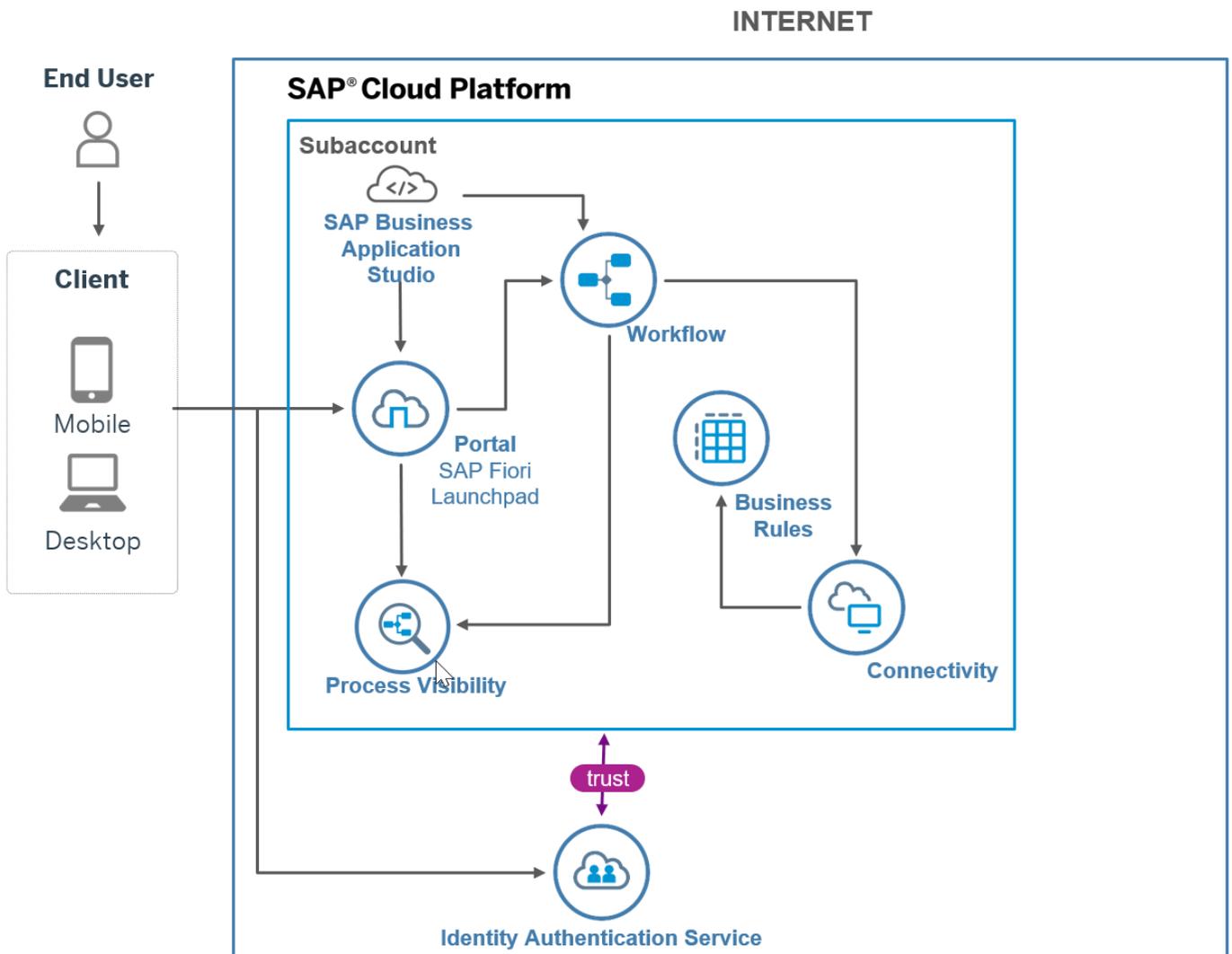
The CAPEX process enables customers to automate capital expenditure request approvals and provide automation across all steps. A request is created by the user and depending on the amount of investment and other related attributes, number of approval steps are determined. The following steps are included as a part of this CAPEX process:

- Business user creates a Capital Expenditure Approval Process request

- Approvers are determined using decisions

- Approvers are notified via email

- Approvers have three decision options (Approve, Reject, Request Rework), and based on the decision, the next approval step will be created or requested for a rework or terminate the approval request.

- Acceptance from all Approvers will send a notification to the requestor and complete the process.

The document has four different sections.
1. Configure SAP Cloud Platform Subaccount to consume the content package
2. Import, configure and Deploy the content package
3. Update Decisions delivered by SAP
4. How to operate the application by Line of Business users

SAP Cloud Platform Workflow Management shall not be used to store or process sensitive personal data. This service can be used if you have a legal ground to process personal data.

Required SAP Cloud Platform Services

The following SAP Cloud Platform services are required to consume the content package **Capital Expenditure Approval Process**:

SAP Cloud Platform Workflow management

SAP Cloud Platform Portal

SAP Cloud Platform Identity Authentication Service (optional)

Setup and Configuration

Capital Expenditure Approval Process content package requires SAP Cloud Platform Workflow Management subscription or a CPEA contract. Follow the setup and configuration section of SAP Workflow Management.

https://help.sap.com/viewer/6f55baaf330443bd8132d071581bbae6/Cloud/en-US/d7910e2bf7f64afc9d0eb21b0cc9e84d.html

Configure Workflow Email Destination

Configure workflow email destination. For more information on configuring destination, see configure workflow email destination.

Configure Business Rules Destination

Configure a business Rules destination with name as "BusinessRules" with Type as HTTP, Proxy Type as Internet and authentication as OAuth2ClientCredentias. Ensure that the URL formatted as `{rule_runtime_url}/rules-service`. Refer how to create a HTTP destination and how to access business rules APIs using OAuth 2.0 Authentication (client credentials)

Destination Configuration

Name:*	BusinessRules
Type:	HTTP
Description:	
URL:*	
Proxy Type:	Internet
Authentication:	OAuth2ClientCredentials
Client ID:*	
Client Secret:*	••••••••
Token Service URL:*	
Token Service User:	
Token Service Password:	

Live Process Artifacts

Process content package

A process content package consists of process steps, process templates, process variants, decisions, visibility models, and documentation. Refer to the [help documentation](#) about these artifacts.

A business process consists of steps that can be executed independently. A process step consists of set of activities together add value to the business. Decisions and Policies as business rules are invoked from a process step. All the activities involved in a process step are grouped and represented as a process step. Table 1 represents the list of steps defined to use in Capital Expenditure Approval process.

A process step is added to a process template with a constraint model. The constraint model defines the number of times a process step could occur in a new process variant.

Table 1. Process Steps.

| PROCESS STEPS	CARDINALITY	DETAILED DESCRIPTION
Initialization	1..1	Initialize the business process with appropriate business data retrieved from business rules. This step can occur only once, and it must be the first step in a process variant.
Approval	0.. N	Approval of Capital Expenditure Request. This step can occur multiple times in a process variant. It is possible to rename the step to appropriate approval roles.
Finalization	1..1	Post processing after completion of all the configured approval steps. This step can occur only once, and it should be the last step in a process variant.

Table 2. Process Step Properties.

PROCESS STEP	PROPERTIES	DETAILED DESCRIPTION
Approval	Role Name	The role of the approver. This text is added to all the activities which are part of this step. This will be visible in Process Visibility.
	Approval Step	The approval step name. The Step names are used in Decisions, which can be configured to determine the approvers.
	Full Re-Approval	When an approver requests rework, this value defines which approval step is taken next: • 'true' will let the same approver continue (keeping the previous approvals) • 'false' will restart the approval request from the first approver.

Table 3. Process Attributes.

PROCESS ATTRIBUTES	DETAILED DESCRIPTION
RequestId	Unique IDof the request
Total Cost	Total cost of Investment
Investment Type	Type of investment
CAPEX	Capital Expenditure
OPEX	Operational Expenditure
ROI	Return on Investment
IRR	Internal Rate of Return
Country	Country of Investment
Currency	Currency of Investment
Business Unit	Business Unit requesting Investment
Energy Efficiency	Energy Efficiency of the asset in percentage
CO2 Efficiency	CO_2 efficiency of the asset
Energy Cost Savings	Energy Cost savings of the asset in percentage
Water Savings	Water Savings of the asset in percentage

Process Variants

A process variant consists of multiple process steps configured by a line-of-business expert. It is possible to create multiple process variants depending on the number of approval steps to configure. An example of a Capital Expenditure Approval Process Variant is given below. Refer to help documentation about how to import content packages and configure a process variant.
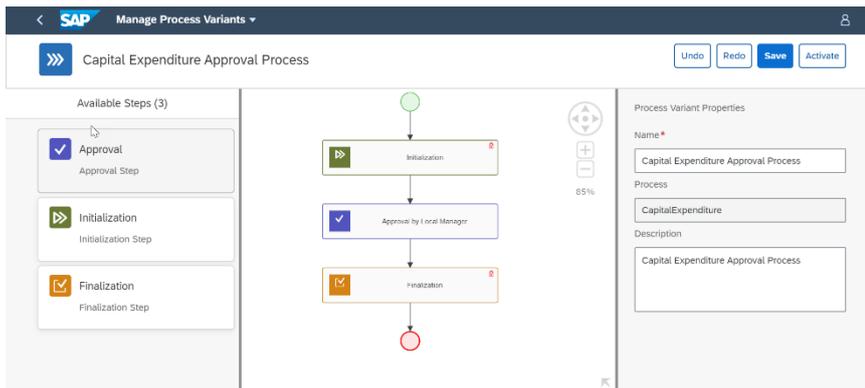
Import Capital Expenditure Approval Process Content

1. Open the SAP Cloud Platform Workflow Management app. For information on accessing the app, please read help documentation.

2. Import content package Capital Expenditure Approval Process. Refer to the standard help

document about [how to import a content package](#).

3. Create a new variant of Capital Expenditure Approval Process. Refer to the standard help documentation about [how to create new Process Variants](#).

   Open content package Capital Expenditure Approval Process in Process Flexibility Cockpit and click Process Variants.

4. Click New Process Variant.

5. Enter Name of the new Process Variant and select Capital Expenditure as the Process.

   Process variant editor enable Line of Business Expert to configure Process variants.

Modify or Delete Approval Steps

1. Select step and update Name and Description.
2. Select Details Tab and configure the Properties.

   Role Name is used in Process Visibility to display activities of a process.

   Approval Step is used to determine approvers using a preconfigured Decision.

   Full-Re Approval is used to determine approval from all approvers are required.

Add new Approval Step.to Process Variant

It is possible to add additional approval steps to a process variant. It is mandatory that these approval steps should be between Initialization and Finalization steps.

1. Drag and drop the Approval step between the steps
2. Select the newly added process step and update Name and Description.
3. Select the Details Tab and update the properties Role Name ,Approval Step and Full Re-Approval.
4. Save and Activate the new Process Variant.

Activating the process variant generate the workflow definition and deploy to your cloud platform account. You can see the newly deployed Workflow definition in Monitor Workflow – Workflow Definitions application in your Fiori Launch pad.

Decisions & Policies

Decisions and policies allow to encapsulate the business logic from core applications. Business Rules capability in SAP Cloud Platform Workflow Management enable customers to author, deploy and execute decisions. Please refer help documentation for more details. Capital Expenditure Approval Process enable customers to flexibly configure decision to gain flexibility to

1. Define auto-approval policy
2. Define approval due date policy
3. Define manual approvers policy

Capital Expenditure Approval Process uses a single Rule Service Interface to consume all the above policies.

Auto-Approval Policy

For certain exceptions, the manual approvals can be skipped. This policy enforces those exceptions.

Input and output

Rule Name: Auto Approval

Input: Investment Details (Structure data type)

ATTRIBUTE	TYPE	DESCRIPTION
Approval Step	String	A unique identification of the approval step, as configured as the input parameter for the approval step in the process variant.
Total Cost	Number	Total cost of the investment.
Business Unit	String	Business unit or the division that is proposing the investment.
Country	String	The country where the investment shall be made.
Investment Type	String	Type of the investment

Output: Is Approval Required (Boolean)

ATTRIBUTE	TYPE	DESCRIPTION
Is Approval Required	Boolean	A flag to determine if the step can be auto approved.

Rule Definition

The auto-approval policy is defined as a text rule. You will be able use any property of the investment details to define exceptions in the approval process.

The sample decision defines that when the total investment cost is more than or equal to 10000 <any currency unit> then approval is mandatory. Otherwise the all the approval steps can be skipped. This can be changed as per the requirement.

Due Date Determination Policy

This policy can be used to determine the due date for each approval step in the capital expenditure approval process.

Input and output

Rule Name: Determine Task Due Date

Input: Investment Details (Structure data type)

ATTRIBUTE	TYPE	DESCRIPTION
Approval Step	String	A unique identification of the approval step, as configured as the input parameter for the approval step in the process variant.
Total Cost	Number	Total cost of the investment.
Business Unit	String	Business unit or the division that is proposing the investment.
Country	String	The country where the investment shall be made.
Investment Type	String	Type of the investment

Output: Duration Due (Structure data type)

ATTRIBUTE	TYPE	DESCRIPTION
Due Duration Reference	String	Reference date of an event in the workflow to determine the approval task due date. The following value helps are available to choose from – start of approval workflow, start of the approval user task, start of the approval step as configured in the process variant.
Due Duration in Days	Number	The number of days that needs to be added to the reference date to determine the approval task duration. It can also accept decimals, like 0.5

Rule Definition

The due date determination policy is defined as a text rule. You will be able use any property available in the input investment details to determine the due date for the approval steps. You can

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use the search help (ctrl+space -> fixed value -> search help) to choose the *due duration reference*.

Manual Approver Policy

Using this policy, you will be able to determine approvers based on various business criteria like country/region, business unit, role, etc.

Input and output

Rule Name: Determine Approvers

Input: Investment Details (Structure data type)

ATTRIBUTE	TYPE	DESCRIPTION
Approval Step	String	A unique identification of the approval step, as configured as the input parameter for the approval step in the process variant.
Total Cost	Number	Total cost of the investment.
Business Unit	String	Business unit or the division that is proposing the investment.
Country	String	The country where the investment shall be made.
Investment Type	String	Type of the investment

Result: List of Approvers (Table data type)

ATTRIBUTE	TYPE	DESCRIPTION
User Group	String	The user group in SAP Cloud Platform who can approve the task.
User ID	String	User ID in SAP Cloud Platform of a single user who can approve the task.
Email	String	Email address of the approver where the notification emails shall be sent.
Is Approval Required	Boolean	A flag to determine if the step can be auto approved. *This is a hidden output in this decision, and the value is received from the Auto Approval Policy.*
Due Duration Reference	String	Reference date of an event in the workflow to determine the approval task due date. This is a hidden output in this decision, and the value is received from the Determine Due Date Policy.
Task Due Duration in Days	Number	The number of days that needs to be added to the reference date to determine the approval task duration. *This is a hidden output in this decision, and the value is received from the Determine Due Date Policy.*

Rule Definition

Using this decision, you will be able to determine approvers for each approval step in the capital expenditure approval process. Multiple rules are applied based on the investment details with possibility for more than one matching criteria. Consider the following while defining the rule:

- You can add or remove conditions from the business criteria available under Investment Details.

- The value defined for the condition "*Investment Details.Approval Step*" should match the input as provided in the approval step properties while defining the variant.

- You can either maintain only user id or only user group or both. Based on the configuration the task will be assigned to the appropriate user and/or group.

- If you do not maintain both user id and user group, then irrespective of the auto-approval policy, the approval will be skipped.

Process Visibility

Process visibility enable Process Owners and Process Operators to gain real time visibility on

processes and key process performance indicators. Process visibility capability in SAP Cloud Platform Workflow Management enable customers gain out of the box process visibility into their deployed processes. Please refer help documentation for more details.

Capital Expenditure Approval

Capital Expenditure Approval Process content package provide out of the box visibility on all the deployed process variants in SAP Workflow Management. A process owner or line of business expert will be able to enhance the visibility scenario.

Configure Visibility Scenarios

1. Go to Process Flexibility Cockpit
2. Select SAP Capital Expenditure Approval Process
3. Click Visibility Scenarios and Select Capital Expenditure Approval

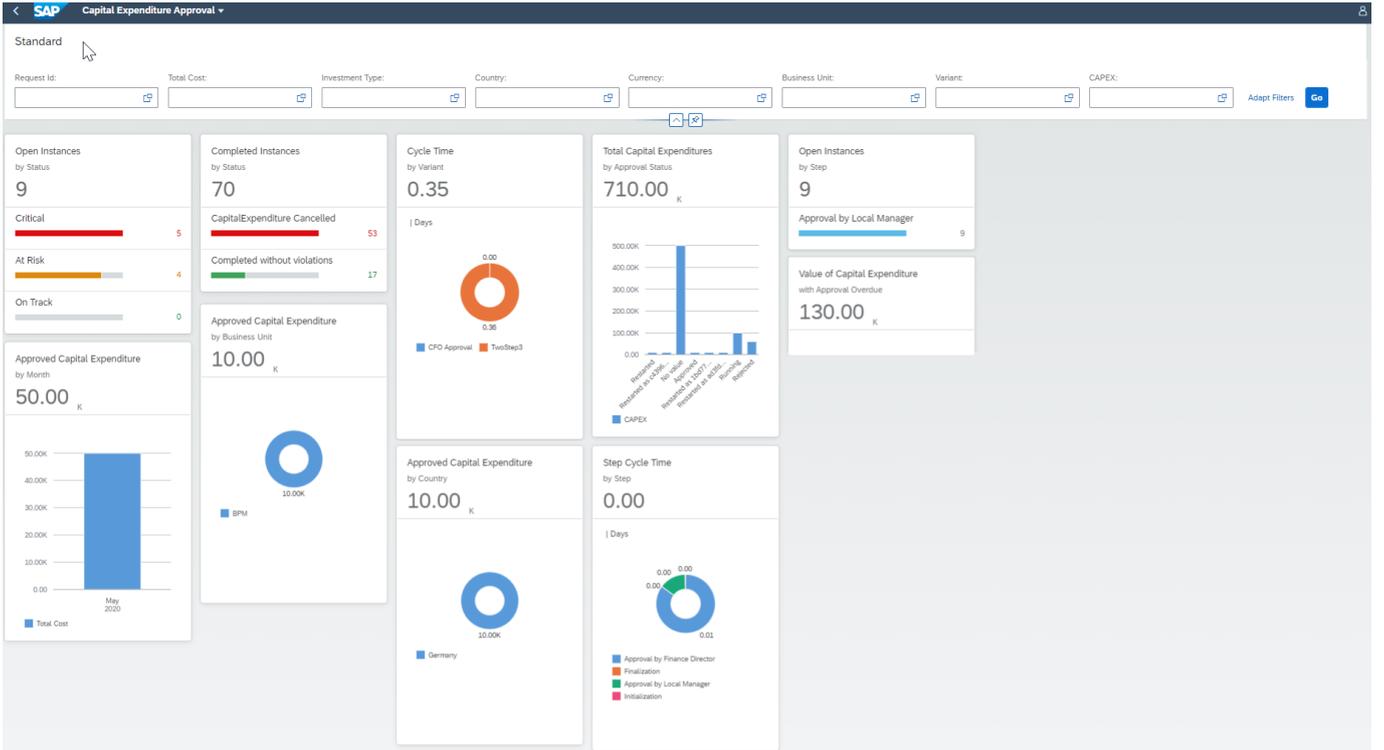Please go through help documentation how to model a visibility scenario.

Access Process Workspace

1. Go to Process Flexibility Cockpit
2. Select SAP Capital Expenditure Approval Process
3. Click Live Process Insights Capital Expenditure Approval

Please go through help documentation how to access process workspace.

Standard

Request Id:	Total Cost:	Investment Type:	Country:	Currency:	Business Unit:	Variant:	CAPEX:		

Adapt Filters   **Go**

Open Instances
by Status
9

Critical
5

At Risk
4

On Track
0

Completed Instances
by Status
70

CapitalExpenditure Cancelled
53

Completed without violations
17

Approved Capital Expenditure
by Business Unit
10.00 K

10.00K

■ BPM

Cycle Time
by Variant
0.35

| Days

0.00

0.35

■ CFO Approval   ■ TwoStep3

Approved Capital Expenditure
by Month
50.00 K

50.00K
40.00K
30.00K
20.00K
10.00K
0.00
        May
        2020

■ Total Cost

Total Capital Expenditures
by Approval Status
710.00 K

500.00K
400.00K
300.00K
200.00K
100.00K
0.00

■ CAPEX

Approved Capital Expenditure
by Country
10.00 K

10.00K

■ Germany

Open Instances
by Step
9

Approval by Local Manager
9

Value of Capital Expenditure
with Approval Overdue
130.00 K

Step Cycle Time
by Step
0.00

| Days

0.00 0.00
0.00
            0.01

■ Approval by Finance Director
■ Finalization
■ Approval by Local Manager
■ Initialization

How to start the Process Variant

Activating a Process Variant creates a new Workflow Definition, which can then be operated like any other workflow. To start the workflow for a given variant, three steps are necessary:

- Determine Workflow Definition Id
- Define Start Payload (Initial Context)
- Start the workflow via Start Form, via custom UI5 application, or via API call

Determine Workflow Definition Id

The Workflow Definition Id is a concatenation of the Process Id and the Process Variant Id, separated by a single dot.

For example, for a Process Variant named "CFO Approval" of the Process "CapitalExpenditure", the Workflow Definition Id would be "capitalexpenditure.cfo_approval".

This can also be seen in the "Monitor Workflows – Workflow Definitions" app:
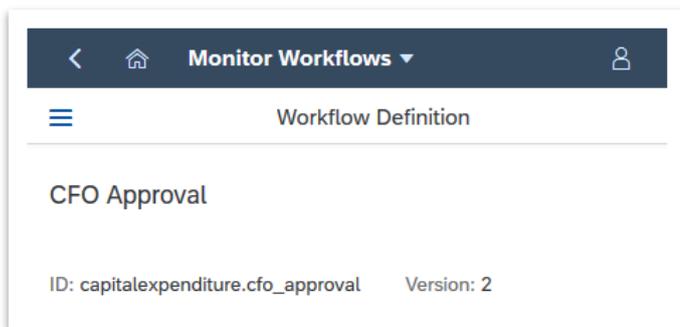
Define Start Payload (Initial Context)

The predefined Form UIs and Business Rules in this package expect a specific workflow context. This context is given to the workflow instance upon starting. Following is the format defined for the Capital Expenditure Approval Process, along with example values:

```
{
"RequestId": "IAP-2020-173",
"Title": "App Creation",
"Requester": {
"FirstName":"John",
"LastName":"Doe",
"Email": "John.Doe@example.com",
"UserId":"jdoe",
"Comments":"Please Approve"
},
"Investment": {
"TotalCost": 50000,
```

```
"Type": "Software",
"CAPEX": 10000,
"OPEX": 2000,
"ROI": 5,
"IRR": 5,
"Country": "Germany",
"BusinessUnit": "BPM",
"Description": "Provide a fresh experience for our customers by providing new
 apps for our services"
},
"Sustainability": {
"EnergyEfficiency": 10,
"CO2Efficiency": 20,
"EnergyCostSavings": 15,
"WaterSavings": 10
},
"isTesting": false
}
```

Table 4 shows the technical description of the fields (see also Table 2 for a business description)

Table 4. special Start Payload fields

FIELD	COMMENT
`RequestId`	This should be unique for each workflow instance.
`Title`	The title is shown in User Tasks and Email notifications.
`Requester.Email`	This email address is used for sending notifications to the requester.
`Requester.UserId`	The user Id of the requester. They might get Rework tasks in their inbox.
`Investment.*` `Sustainability.*`	Those values are shown in the UIs and evaluated by the Business Rule.
`isTesting`	If this is 'true' on workflow start, the testing mode is activated. This results in approval notifications and tasks being send to the process initiator instead of the approver as defined in the Business Rule. Ensure that it is 'false' for productive systems.

Start the workflow

Refer to the documentation for Creating a Start UI with UI5 or using Forms.

Alternatively, a workflow can be started via API. See the API Reference for "Workflow Instances" – "Start a new Instance" by issuing a REST POST call to the `/v1/workflow-instances` endpoint.

Using the Capital Expenditure Approval workflow

Each defined Approval step will create a task for the respective approver, as defined by the Business Rule.

The approver will be able to view all entered investment data and offered three actions:

- **Approve:** the approval request will continue with the next step, or complete if this was the last configured step

- **Reject:** the approval request will immediately be stopped. No further steps or approvals are executed.

- **Rework:** the original approval requester is tasked to rework their request. For this, a new task will be created for the requester. Upon sending the updated request for re-approval, the approval task appears again for approval. Depending on the variant configuration, this will be given to the approver who required the rework, or it will start from the beginning with the first configured approver.

In addition, an optional comment field is provided for both approvers and requester.

A history of approval steps (decisions), along with the comments, is displayed as well.

See the screenshot below for an example approval task.

Approval Task for Local Manager

Approval for Capital Expenditure Request "App Creation" in your role as Local Manager

Created On: May 29, 2020
Created By:

Priority
Medium

Due On
May 30, 2020

Investment Details   Sustainability   Investment Requester   History   Comments

Field	Value
Title:	App Creation
Request Id:	IAP-2020-173
Type:	Software
Country/Region:	Germany
Business Unit:	BPM
Description:	Provide a fresh experience for our customers by providing new apps for our services
CAPEX:	10000
OPEX:	2000
Total Cost:	50000
IRR:	5
ROI:	5

Sustainability

Field	Value
Energy Efficiency %:	10
CO2 Efficiency %:	20
Energy Cost Savings %:	15
Water Savings %:	10

Investment Requester

Field	Value
First Name:	John
Last Name:	Doe
Comment from Requester:	Please Approve

History

History

User	Role	Decision	Comment
	Local Manager	approve	Approved by me.
	Finance Director	rework	Please update the TotalCost, taking the new vendor prices into account.
	Requester	Reworked	Updated.

Comments

Field	Value
Approval Comments:	Approved.

Approve   Reject   Rework   Show Log   Claim