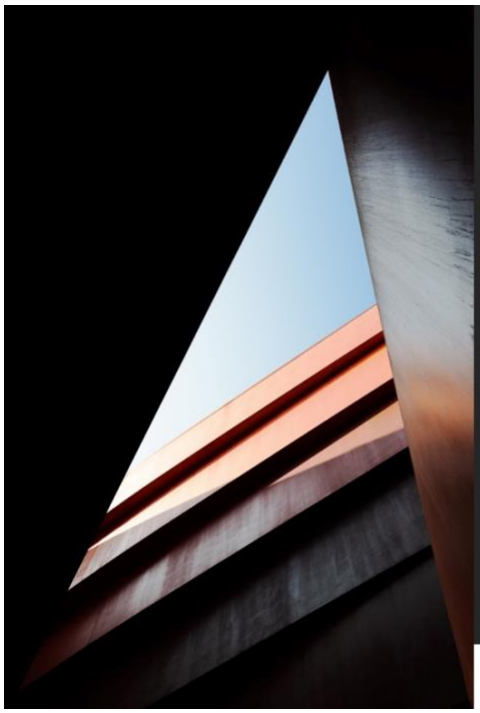


The BPM Toolkit Developer's Guide

Serge Luca, aka Doctor Flow
Brussels, January 2021
@sergeluca

Table of Contents

Pre-requisites

You must install the Power Platform BPM Toolkit by following the Setup guide available on GitHub.

Configuring a request compatible with the BPM Toolkit

In this guide, you will learn how to configure a fictitious HR request named **PPA_PARTTIME** and create a compatible canvas Power application to make it compatible with the BPM Toolkit.

1. Create a SharePoint list named “PPA_PARTTIME
2. Add the BPM Toolkit columns (single line of text) for the BPM Toolkit (when you create these columns, use the modern UI, don’t go through the List settings menu to avoid any hidden special characters in the columns name):
   Submitter,
   On Behalf Of
   CaseID,
   CaseSubmissionStatus
   Actors
3. Add your custom columns:
   From
   To Percentage
4. Set the Title column **optional**

Your List columns should look like this in the List settings:

Columns

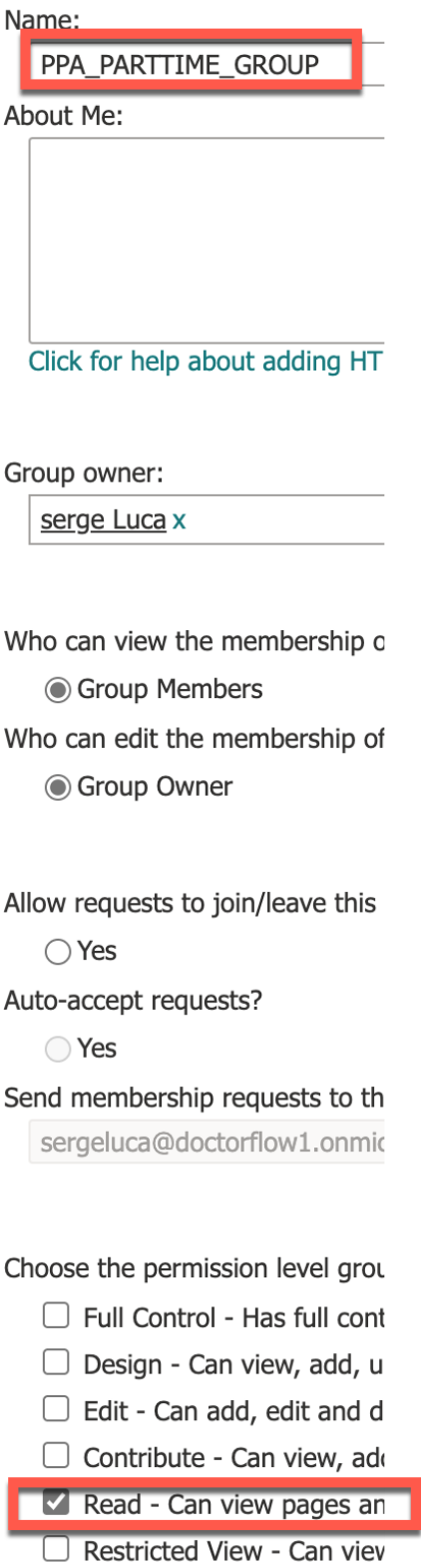
A column stores information about each item in the list. The following columns are currently available in this list:

Column (click to edit)	Type	Required
Title	Single line of text	
Modified	Date and Time	
Created	Date and Time	
From	Single line of text	
To	Single line of text	
Percentage	Single line of text	
Submitter	Single line of text	
OnBehalfOf	Single line of text	
CaseID	Single line of text	
CaseSubmissionStatus	Single line of text	
Actors	Single line of text	
Created By	Person or Group	
Modified By	Person or Group	

You can take a look at the SharePoint list PPA_ORDER that comes with the demo.

5. Set the **Title** column optional.
6. Create a **SharePoint Security group** for the request and name it PPA_PARTTIME_GROUP

- Go to the **Site settings** menu
- Select "**Advanced permissions settings.**"
- Click Create Group, name the group PPA_PARTTIME_GROUP
- Select the **Read** permission as illustrated below:

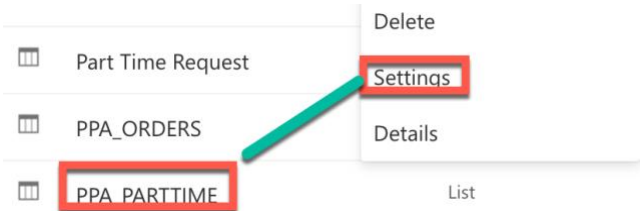


- Click **Create.**

  We will now define the users who are supposed to approve/reject/review the requests of type ORDER.

7. Define the request parameters in the list **BPM Security groups for Case:**

- **Case Type**: PPA_PARTTIME
- **Security Group**: PPA_PARTTIME _GROUP
- **Security Level:** type **HighLevel** (this means that the request and the approval pipeline will be fully secured; other options will be available in the next releases of the BPM Toolkit).
- **RequestListGuid**: the Guid of your PPA_PARTTIME SharePoint list (to find the Guid, go to the SharePoint **site Content** menu, select the **list settings**:



Case Type	Security Group	Security Grou...	SecurityLevel	TeamID	TeamChannelID	RequestListGuid
PPA_ORDER	PPA_ORDER_GROUP		HighLevel	78930ac0-4ccf-4d5c-b8d3-73e3c82bd65a	19:cca6c81cdac04b61845a8bdb195910e7@thread.tacv2	0f54c2da-a5bc-4d71-bbee-a9bda62073ca
ORDER	ORDER_GROUP		HighLevel			
PPA_PARTTIME	PPA_PARTTIME_GROUP		HighLevel			75cca9c4-d8d2-4085-90e6-f271ff811f59

8. Create a workflow with the steps and the roles defined below:

- Go to the SharePoint list **Meta workflows** and add 3 rows with

    a. 0, 1, 2 in the **Step** column and
    b. **PPA_PARTTIME** in the **CaseType** column
    c. **Feedback** in the **ActionExpected** column

0	_HR_LONDON	PPA_PARTTIME	Feedback
1	_HR_NYC	PPA_PARTTIME	Feedback
2	_DIRECTORS	PPA_PARTTIME	Feedback

If _HR_LONDON rejects the PARTTIME request, we want the workflow to skip the existing steps and to go to **_Directors**:

    d. in the _HR_LONDON row, set the following properties:

If property	if operation	if value	if Goto
Status		Negative	_SUPERVISORS
Status		Negative	_DIRECTORS

Your Meta-workflow should look like this:

BPM Security groups for Case

Title	Case Type	Security Group	Security...	Security...	TeamID	TeamChannelID	RequestListGuid
	PPA_ORDER	PPA_ORDER_GROUP		HighLevel	78930ac0-4ccf-4d5c-b8d3-73e3c82bd65a	19:cca6c81cdac04b61845a8bdb195910e7@thread.tacv2	0f54c2da-a5bc-4d71-bbee-a9bda62073ca
	ORDER	ORDER_GROUP		HighLevel			
	PPA_PARTTIME	PPA_PARTTIME_GROUP		HighLevel			75cca9c4-d8d2-4085-90e6-f271ff811f59

- Go to the SharePoint list B**PM Roles** and create the **3 roles** in the **Role** column:

BPM Roles

Title	Role
	_SUPP_PARIS
	_SUPP_NYC
	_SUPERVISORS
	SYSTEM SUPERVISOR
	_HR_LONDON
	_HR_NYC
	_DIRECTORS

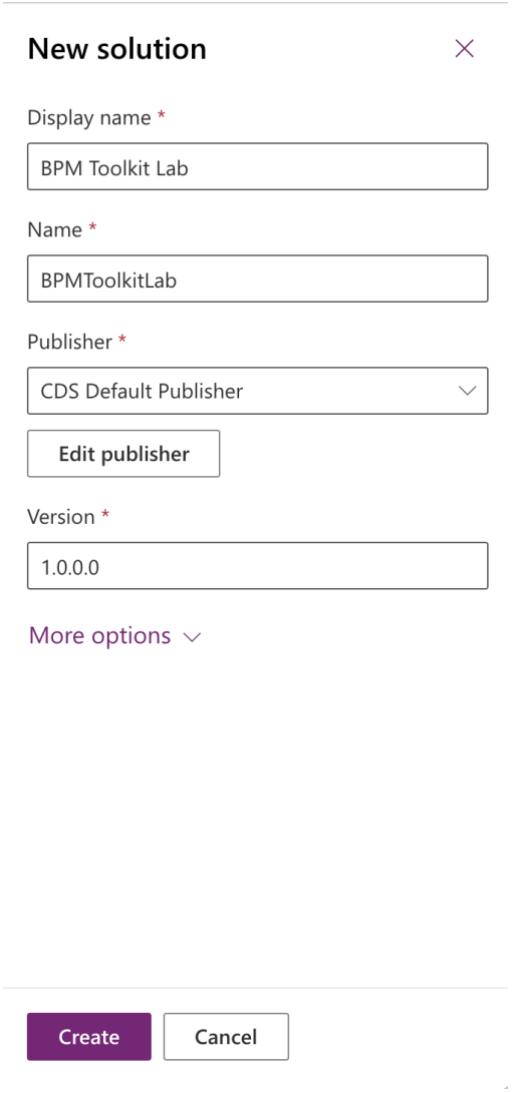
- Go to the SharePoint list **BPM Persons in Roles** and associate the roles with your e-mail:

BPM Persons in Roles

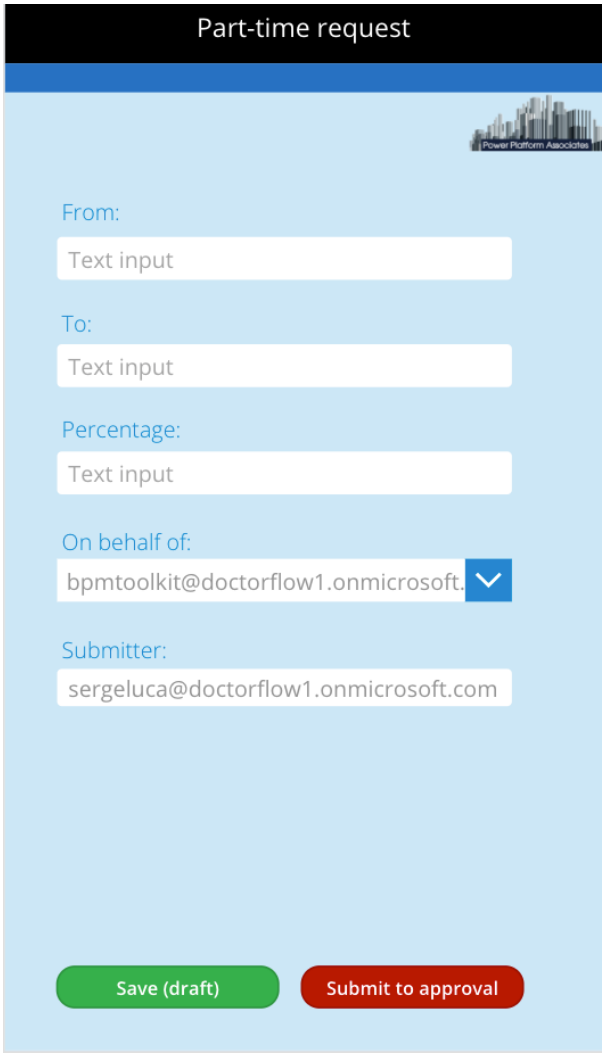
Title	PersonEmail	Active	Role
	sergeluca@doctorflow1.onmicrosoft.com		_SUPERVISORS
	sergeluca@doctorflow1.onmicrosoft.com		_SUPP_NYC
	sergeluca@doctorflow1.onmicrosoft.com		_SUPP_PARIS
	sergeluca@doctorflow1.onmicrosoft.com		SYSTEM SUPERVISOR
	sergeluca@doctorflow1.onmicrosoft.com		_HR_LONDON
	sergeluca@doctorflow1.onmicrosoft.com		_HR_NYC
	sergeluca@doctorflow1.onmicrosoft.com		_DIRECTORS

Creating a request Power Apps application for the BPM Toolkit

1. Create a Solution named BPM Toolkit Lab:



2. Create a **Power Apps canvas** application.
3. Add a **SharePoint connection** to your PPA_PARTTIME SharePoint list.
4. Add an **Officer365 Users** connection.
5. Create the first screen that should look like this:



For the fields On Behalf of and Submitter, you can take a look at the code of the PPA_ORDER application in the BPM Toolkit Demo solution.

6. In the **App OnStart** event, write:

```
Set (
   gblCaseID,
   ""
);
Set (
   gblAction,
   Param("action")
);
Set (
   gblCaseID,
   Param("CaseID")
);
If (
```

```
    gblAction = "view" Or gblAction = "edit",
    Set (
        gblPPA_PartTime,
        LookUp (
            PPA_PARTTIME,
            CaseID = gblCaseID
        )
    )
)
```

7. In the **ButtonSaveDraft** select event, write this:

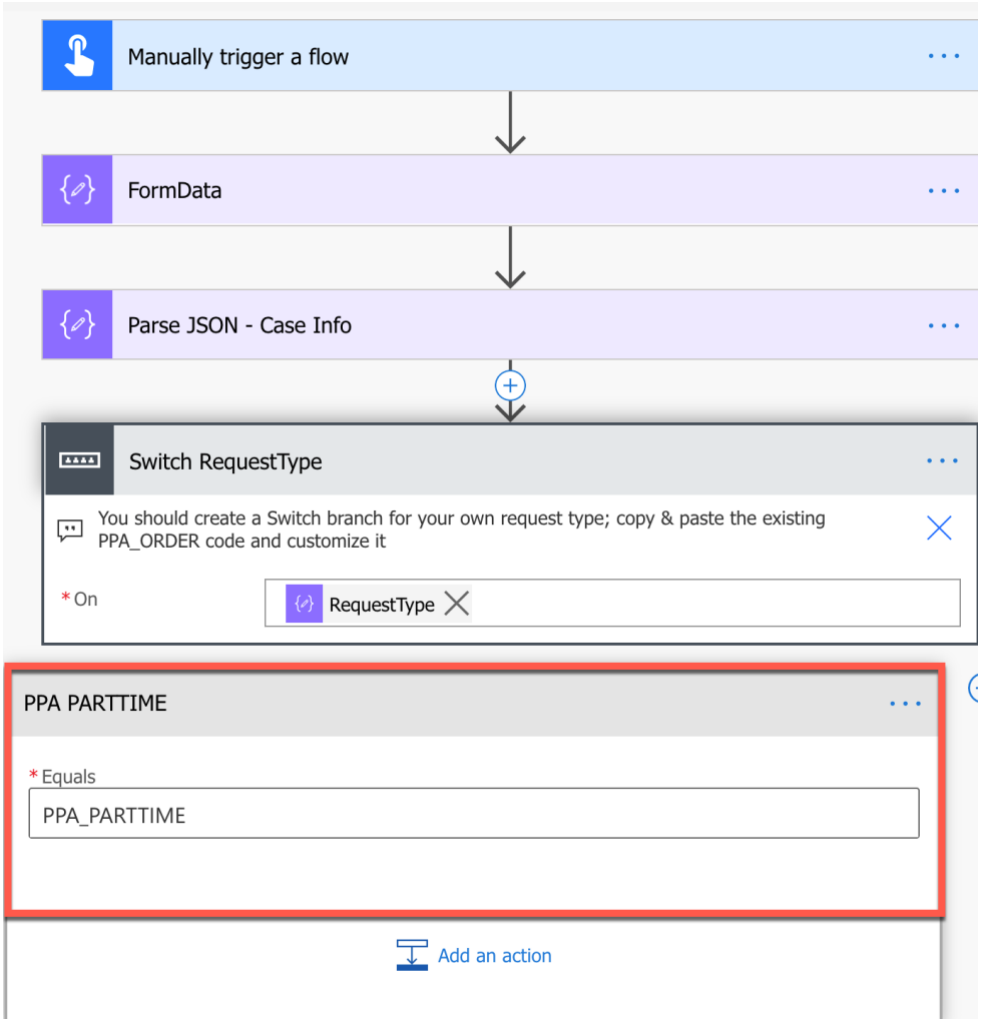
```
Set(
    gblSubmitter,
    txtSubmitter.Text
);
Set(
    gblOnBehalfOf,
    dropOnBehalfOf.Selected.Mail
);
Set (
    gblCaseDescr,
    "Part-time request for " & Left(
        gblOnBehalfOf,
        Find(
            "@",
            gblOnBehalfOf
        ) - 1
    )
);
Set (
    gblFrom,
    txtFrom.Text
);
Set(
    gblTo,
    txtTo.Text
);
Set(
    gblPercentage,
    txtPercentage.Text
);
Set (
    gblPartTime,
    {
```

```
      /* Mandatory for BPM Toolkit */
      CaseID: gblCaseID,
      /* Mandatory for BPM Toolkit */
      Submitter: gblSubmitter,
      /* Mandatory for BPM Toolkit */
      OnBehalfOf: gblOnBehalfOf,
      /* Mandatory for BPM Toolkit, Must be FINAL or DRAFT */
      CaseSubmissionStatus: "DRAFT",
      /* Mandatory for BPM Toolkit */
      RequestType: "PPA_PARTTIME",
      /* Mandatory for BPM Toolkit */
      CaseDescr: gblCaseDescr,
      /* Optional for BPM Toolkit, connect to Actor in Meta-workflows */
      Actors: "",
      From: gblFrom,
      To: gblTo,
      Percentage: gblPercentage
   }
);
```

8. In the **ButtonApproval** select event, write the same code, but **CaseSubmissionStatus**: "FINAL".

9. Save and publish the application; we will get back to it later. In the next steps, you will update the Adaptor flow to communicate with the BPM Toolkit.

10. Go to the BPM Toolkit Demo solution and edit the flow **PPA – Submit Form Data**
11. Add a **new branch** in the switch for PPA_PARTTIME:



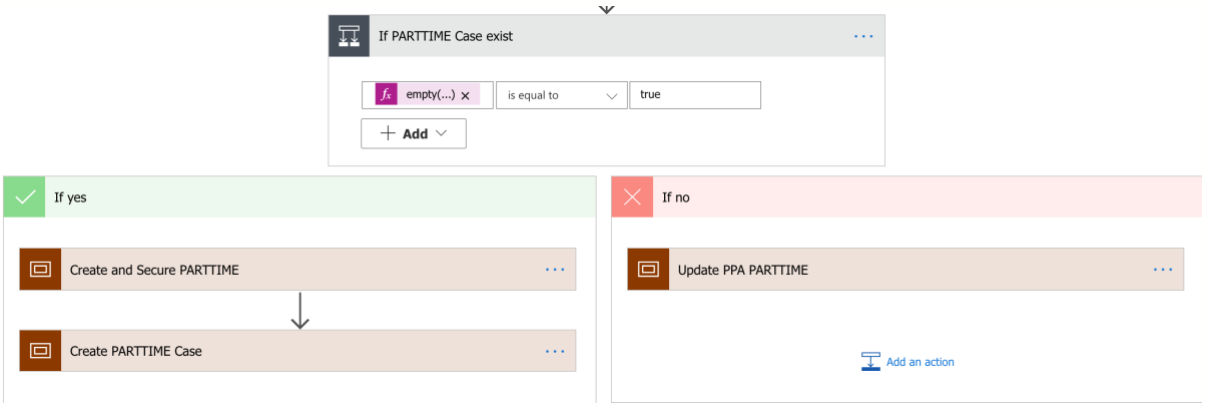
12. Like in the other branch, add a **ParseJSon** action with the following schema:

```
{
    "type": "object",
    "properties": {
        "From": {},
        "To": {},
        "Percentage": {},
        "OnBehalfOf": {},
        "RequestType": {},
        "Submitter": {},
        "CaseID": {},
        "CaseSubmissionStatus": {},
        "CaseDescr": {},
        "Actors": {}
    }
```

}

13. Take a look at the code in the other branch (PPA_ORDER) to create your PPA_PARTTIME branch

    (Note: we are working on another solution to make this more generic).



14. Save the flow.

15. Edit your canvas application and provide the code to submit the DRAFT and the FINAL PPA_PARTTIME:

- Add a reference to the flow **PPA-SubmitFormData-Proxy**
- As the last line of your buttons event, add

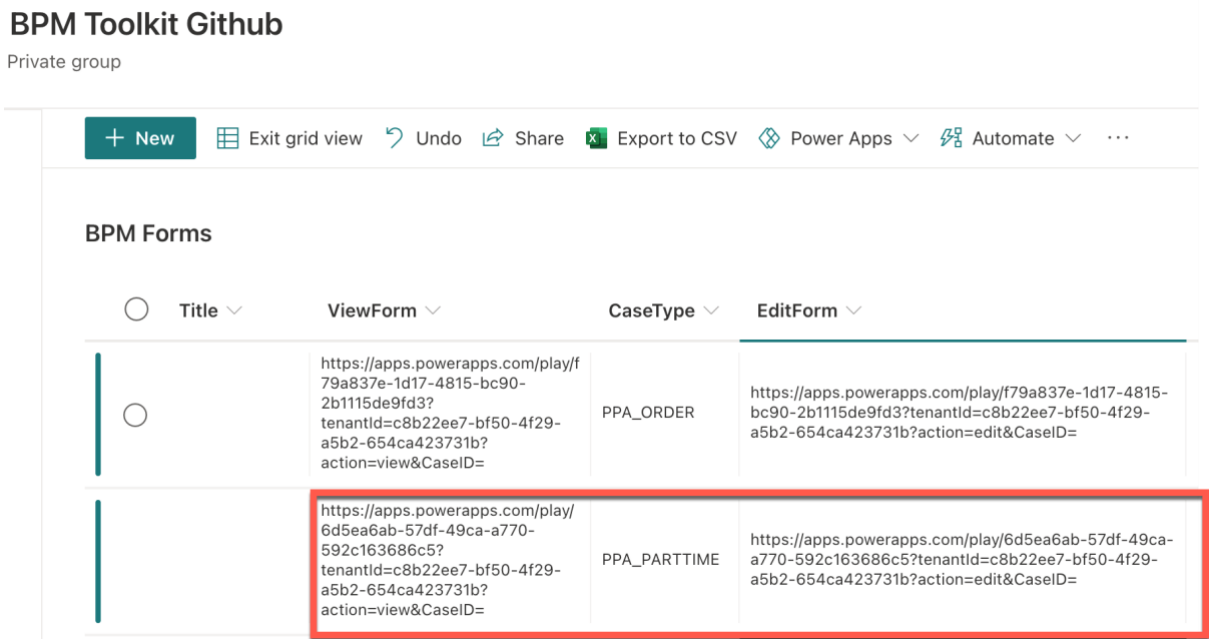
```
'PPA-SubmitFormData-Proxy'.Run(JSON(gblPartTime, JSONFormat.IndentFour))
```

16. Add a screen to display that the operation has successfully be done.

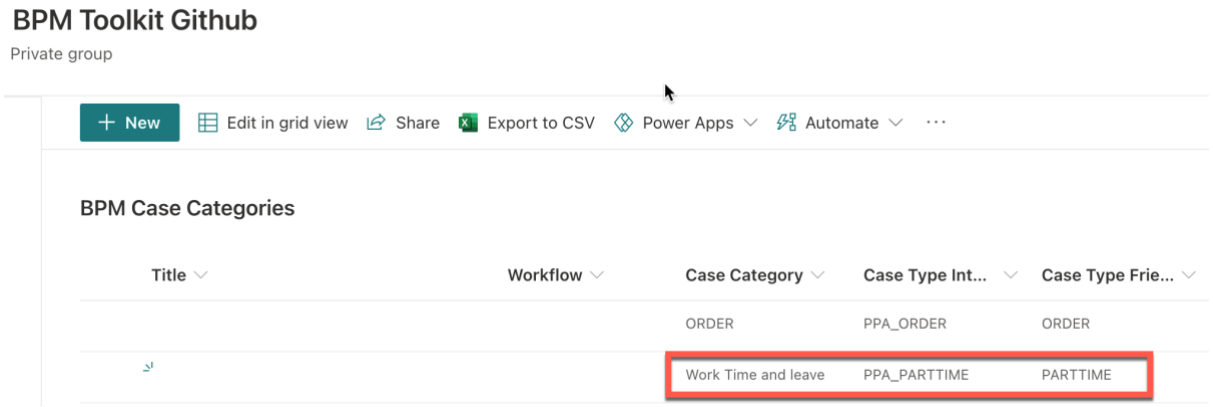
Save and publish your application.

17. Go to the SharePoint list **BPM Forms** and add an entry for the PPA_PARTTIME request.

- For the **ViewForm** column, append the application id with ?action=view&CaseID=
- For the **EditForm** column, append the application id with ?action=edit&CaseID=

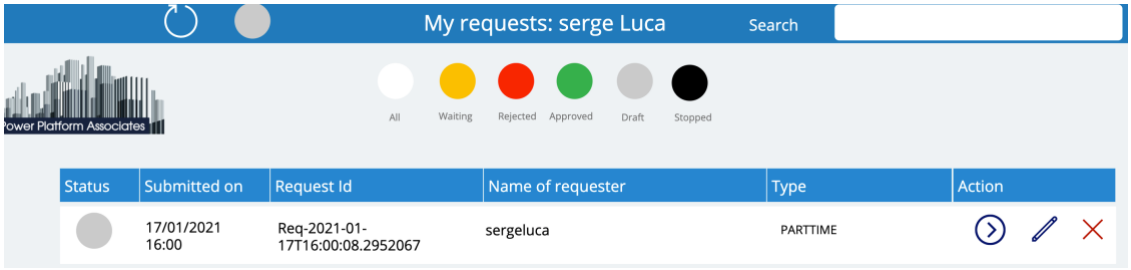


18. Go to the SharePoint list **BPM Case Categories** and add an entry for PPA_PARTTIME



19. Run your PowerApps application and submit the first request, save it as a draft.
20. If you followed the BPM Toolkit Setup Guide, the My Dashboard is available on your SharePoint site homepage:

21. Go to the My Dashboard app; the request should be visible in the DRAFT category:



22. If you click on the View or Edit button on the request:

Your application will load, but the associated data won't show-up: we still have to update the application slightly.

23. Edit your Power Apps application, and edit the Main form:

- Set the default property of the f**rom** field to gblPPA_PartTime.From

- Set the default property of the **Tof**ield to gblPPA_PartTime.To
- Set the default property of the P**ercentage** field to gblPPA_PartTime.Percentage
- Set the default property of the **On Behalf Of** to

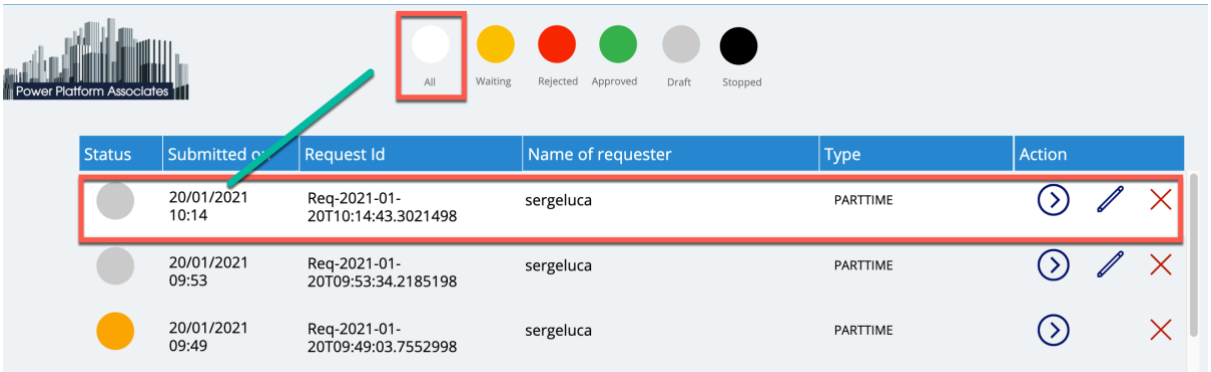
If (gblAction <> "view" And gblAction <> "edit", Office365Users.MyProfileV2().mail, gblPPA_PartTime.OnBehalfOf)

24. Save and publish your form.

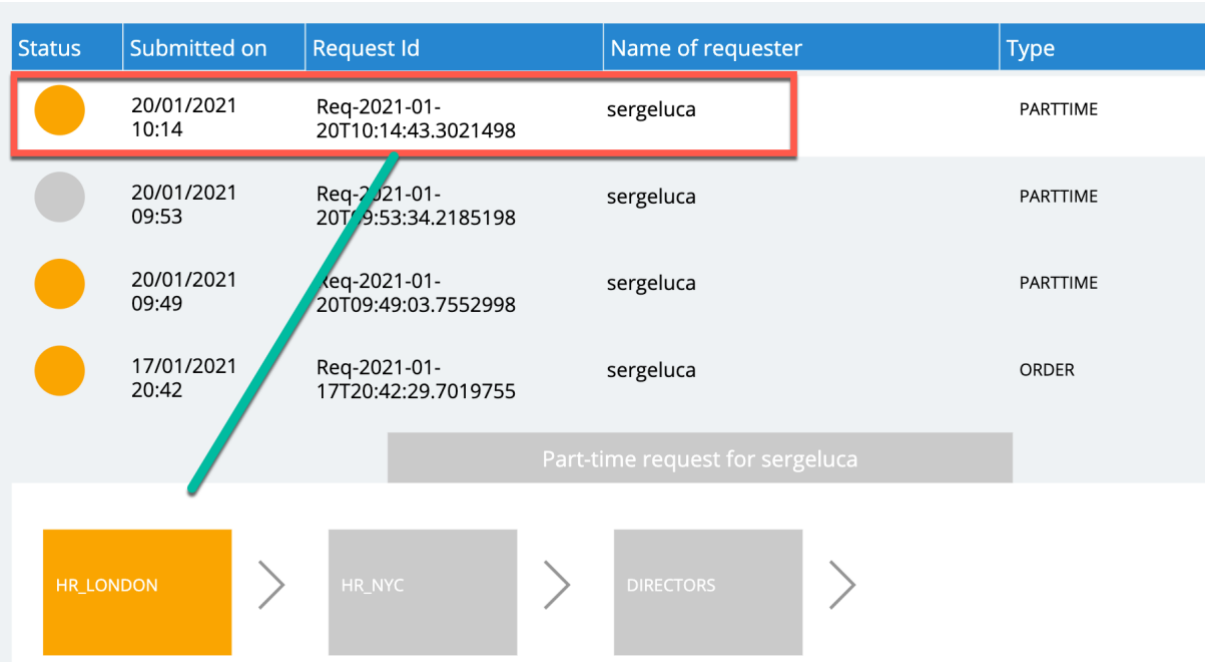
Using the BPM Toolkit My Dashboard

25. Go back to **My Dashboard** application and edit the request. Change some data and save the request as a draft again. Reload it to see if your request has been updated.

26. Submit the request as a draft.
27. Go to My Dashboard, edit the request and send it to approval.
28. The request is no longer in the Draft category; it is transitioning to Waiting.

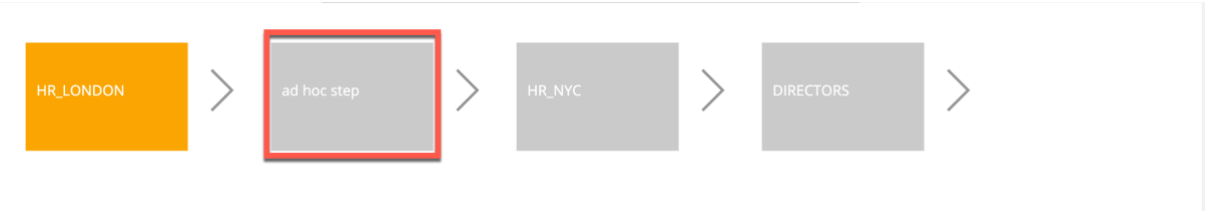


After 1 minute, the workflow will be visible in the My Dashboard, and eventually, the first step will be orange (Waiting).



So basically, end users submitting requests can follow the business process on the y Dashboard.

It is essential to know that end users can only watch the evolution of their request. They won't see who in the pipeline did accept or reject or comment on the request: this is on purpose for confidentiality reasons: only actors in the pipeline can see the comments. Only "officers" can see more details using the Workflow Control Center (we will illustrate it later). If an officer adds a new actor to the workflow during the process, end-users won't see who this actor is. They will only see a unique shape named "ad hoc step" as illustrated below:



Security

The current BPM Toolkit security level for all requests is “HighLevel’. This is what you defined in the SharePoint list **BPM Security groups for Case.**

This means that the request details in your custom request list, but also in the BPM Toolkit system lists are only available in read only mode to the requester, the On Behalf of and users in the approval/review pipeline even if these users are added dynamically when the workflow is already started.

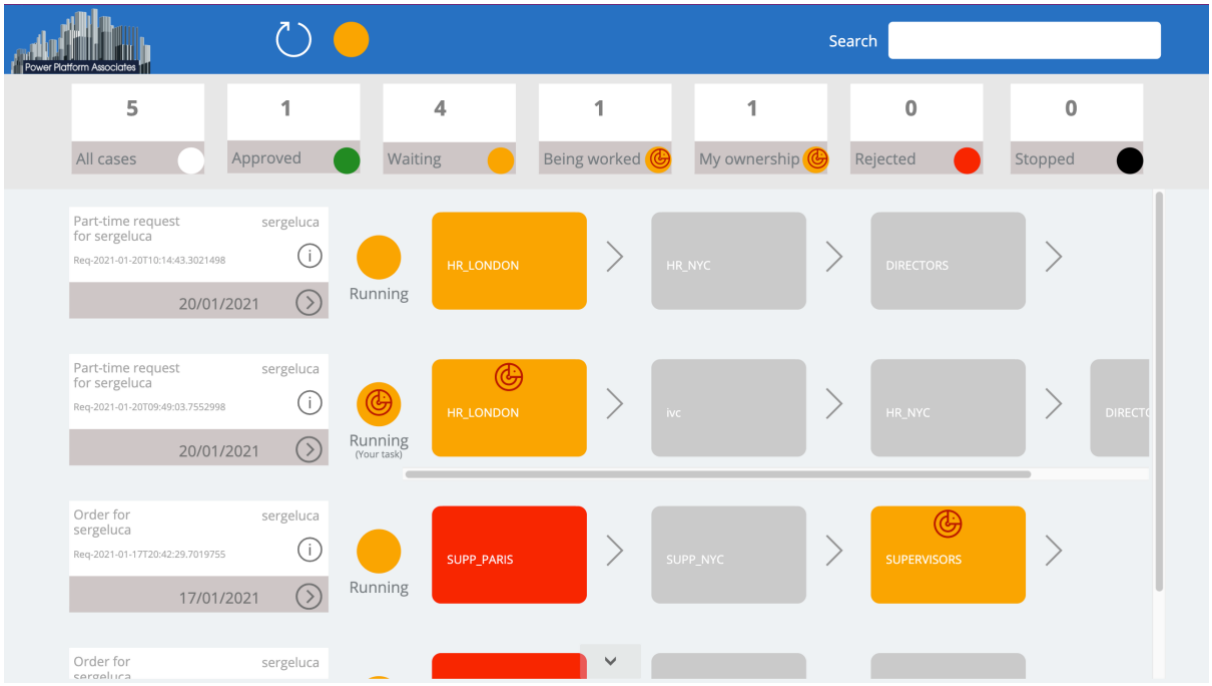
Basically, everything is strictly secured.

We will provide another optional security model in the next releases.

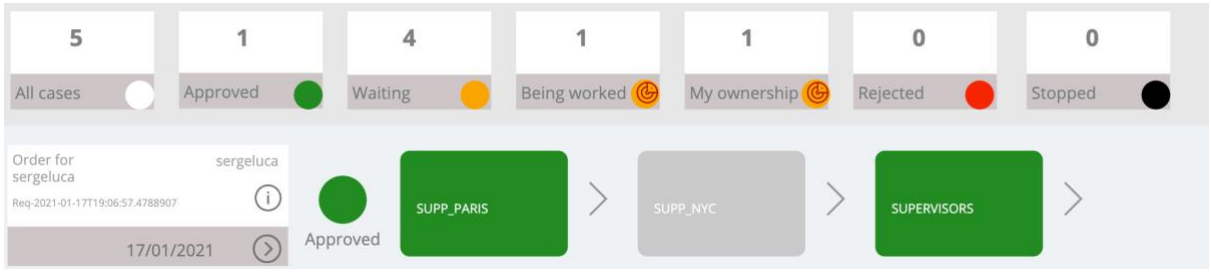
Using the BPM Toolkit Workflow Control Center

You played the end-user role submitting a request, but now you will play the HR officer's role in managing the request. And this activity takes place in the Workflow Control Center:

If you want to access the Workflow Control Center application, your e-mail address must be mentioned in the SharePoint list BPM persons in Roles; this is the case if you followed the procedure.



At the top of this screen, some essential KPIs and filters have been provided.
For instance, if you click on the Approved filter, you will only see the business process finalized with an approved status.



Same logic for Rejected, Waiting, Stopped, and All Cases.
The KPIs in the filters are not calculated in real-time; there is a scheduled flow named **BPM Toolkit - Statistics Schedule Statistics** in the BPM Toolkit solution that calculates these KPIs.

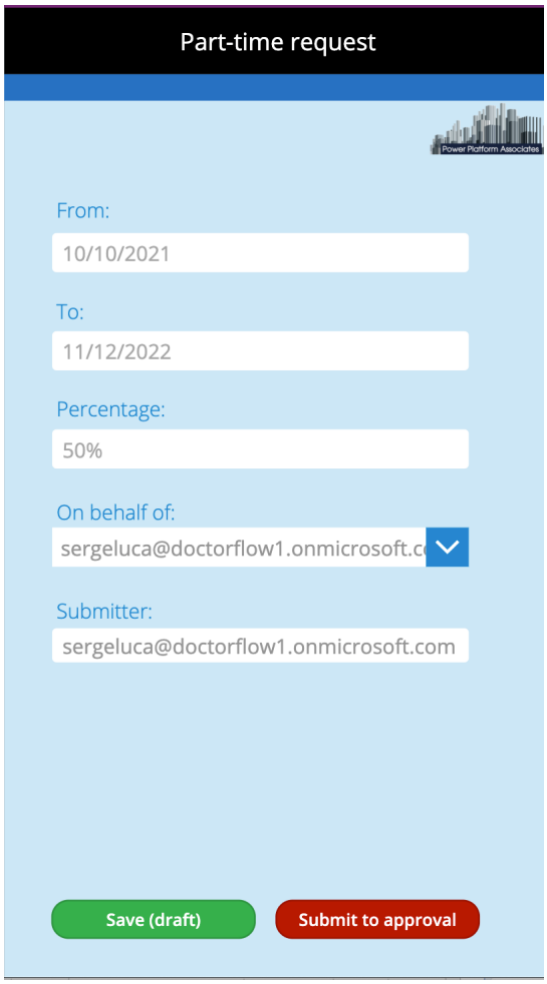
The filter **My Ownership** filterers all workflows locked by you, meaning that you are working on them.

The filter **Being worked** is supposed to filter all workflows locked by someone. The filter does not work yet in the preview.

The search is not activated yet in the preview.

To display the request details, you must click on the “i” icon.

The associated form will show-up :

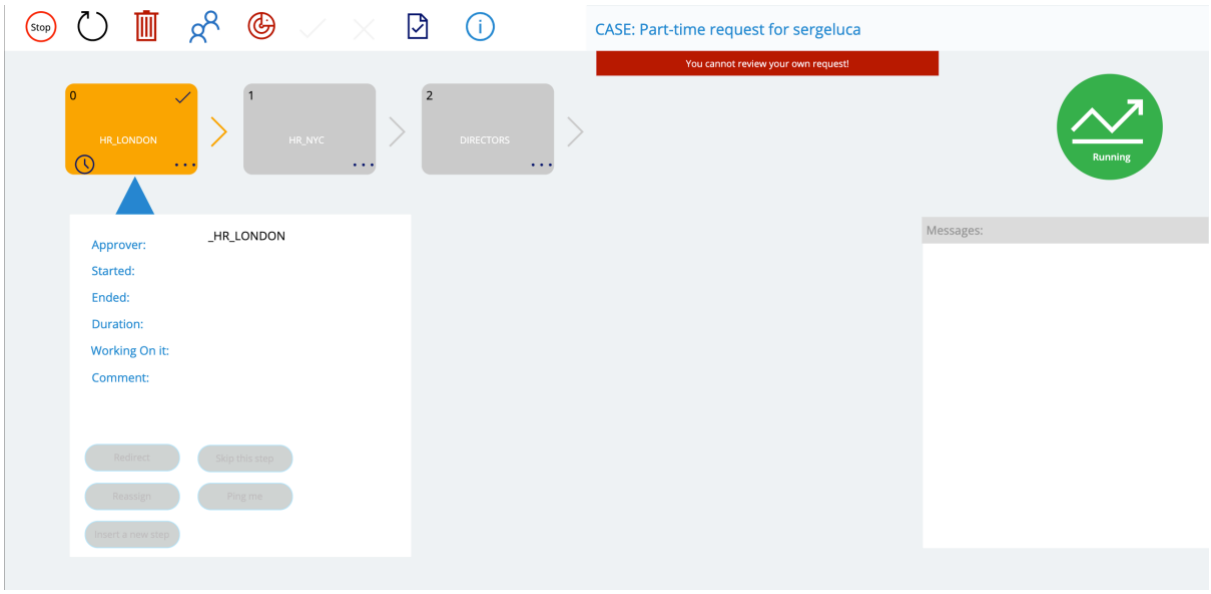


We will have to update the code to allow or not edit by the workflow officers when the request is not DRAFt anymore, but we will do that later.

Using the BPM Toolkit Workflow Panel

Back to the Workflow Control Center.
Clicking the workflow arrow :

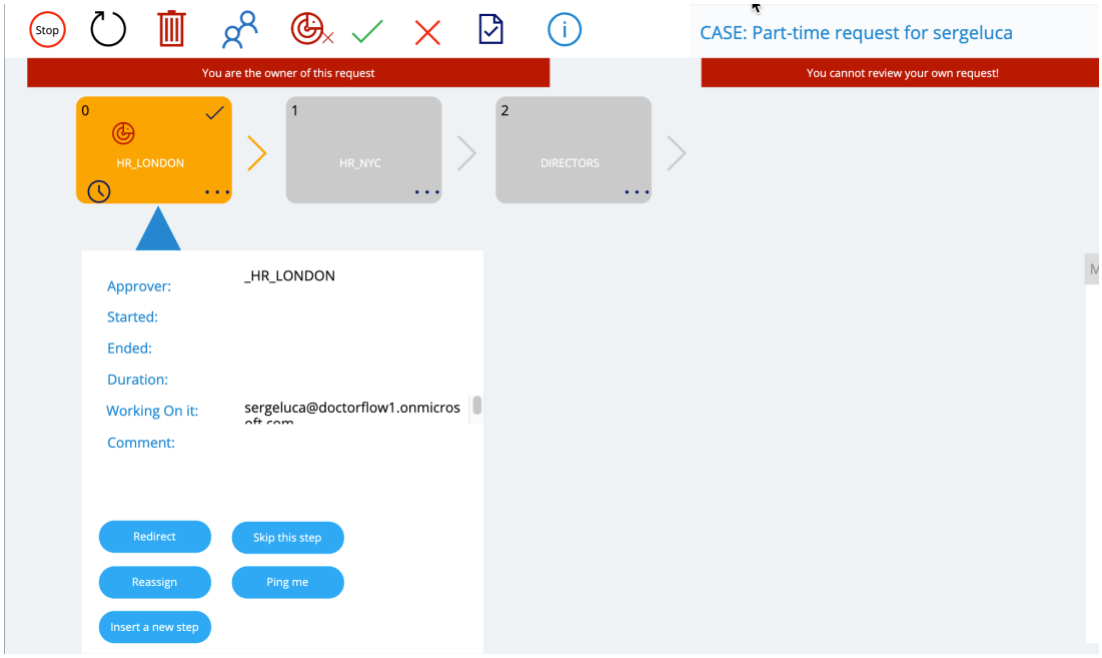
…will open the **Workflow Panel**:



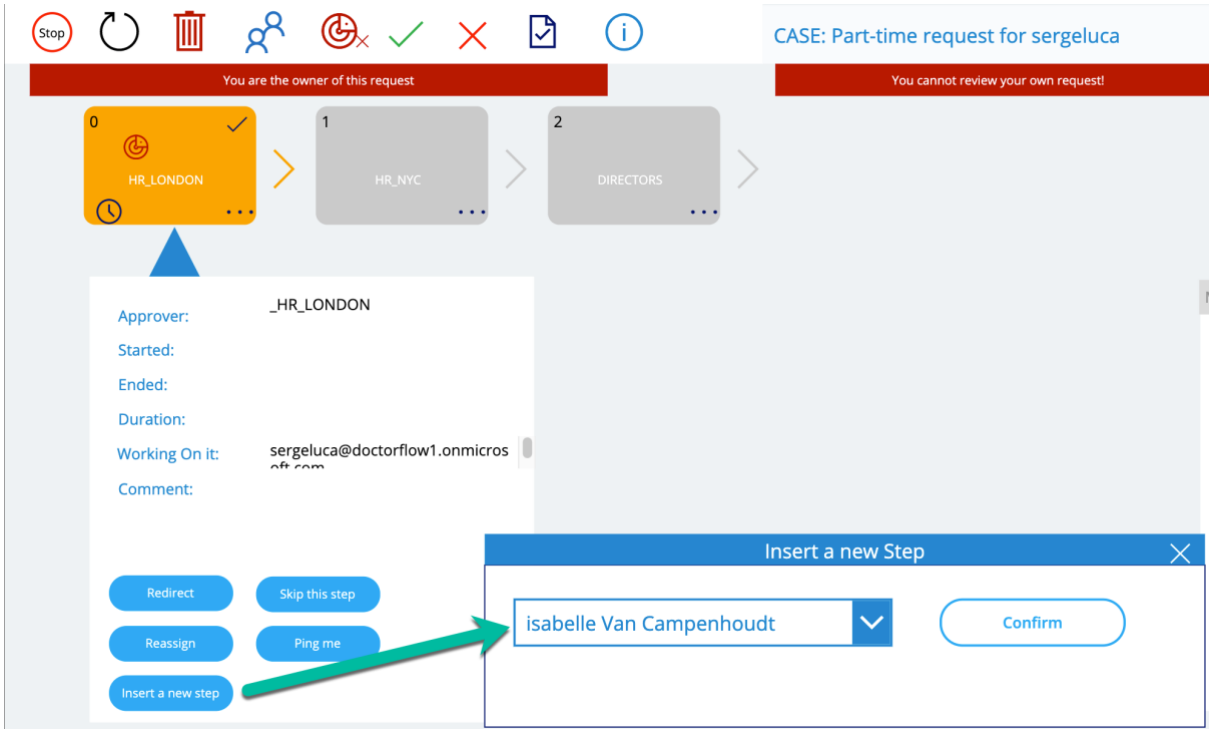
This is where, as a workflow officer, you can act on the request.

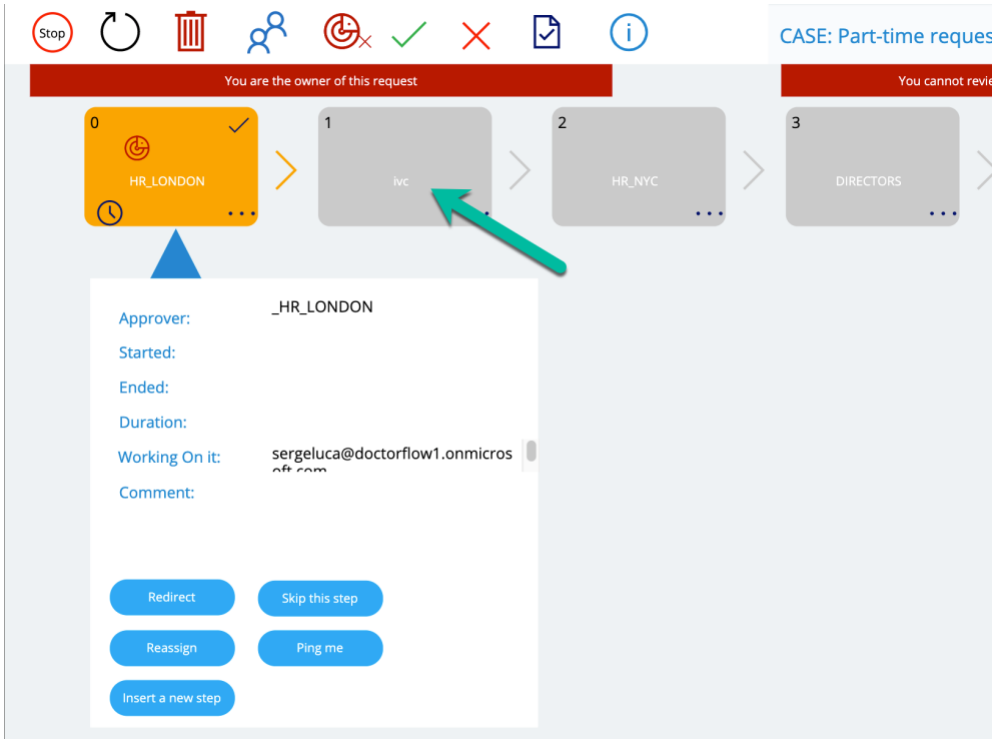
(1) The first icon, “stop,” stops the workflows. When stopped, the workflow cannot restart.
(2) This icon is for refreshing the panel
(3) The Bin icon allows you to remove the workflow; it is visible if your role is defined as System supervisor in the SharePoint list BPM Persons in Role. System Supervisor in an out of the box role.
(4) This icon displays your roles
(5) This icon allows the current user to take ownership of the process
(6) This icon allows approving the request
(7) This icon allows rejecting the request
(8) This icon adds a message in the internal messaging system associated with the request
(9) This icon displays the request details

If you take ownership of the request, new functionalities will be available (see below buttons in blue):

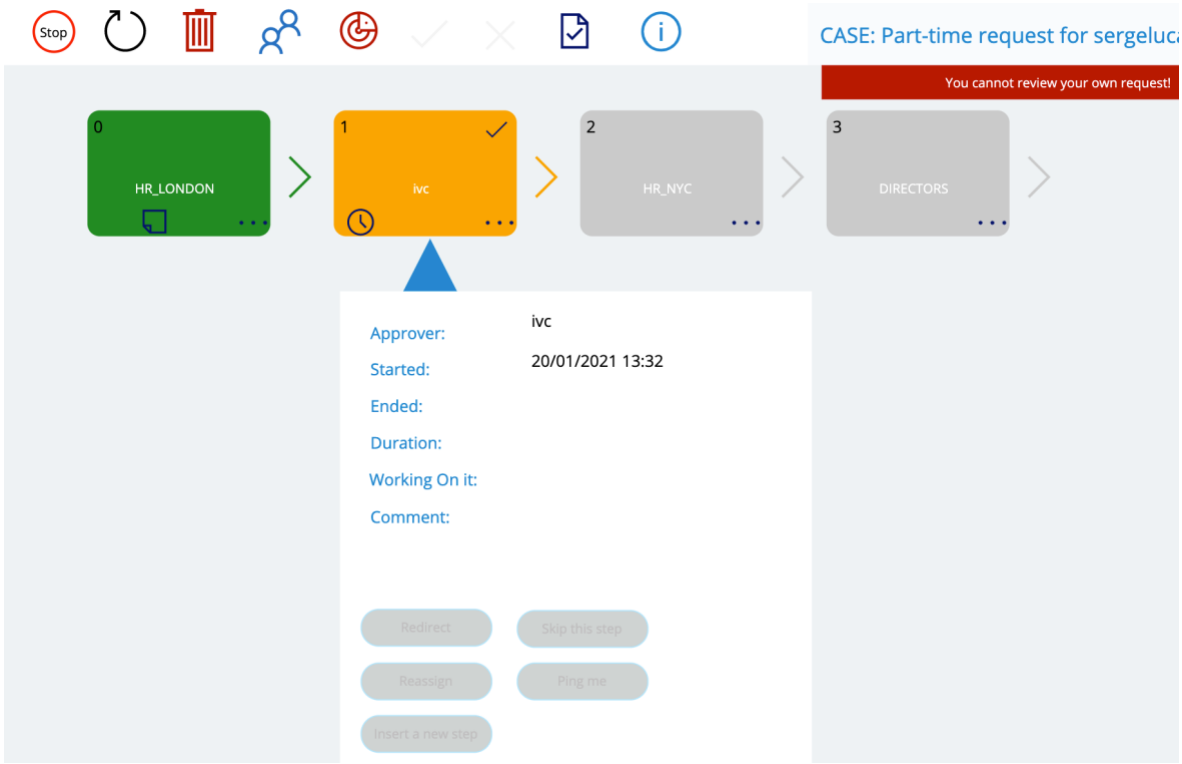


For instance, if you click on Insert a new Step, you will add a new user in the approval/review pipeline:



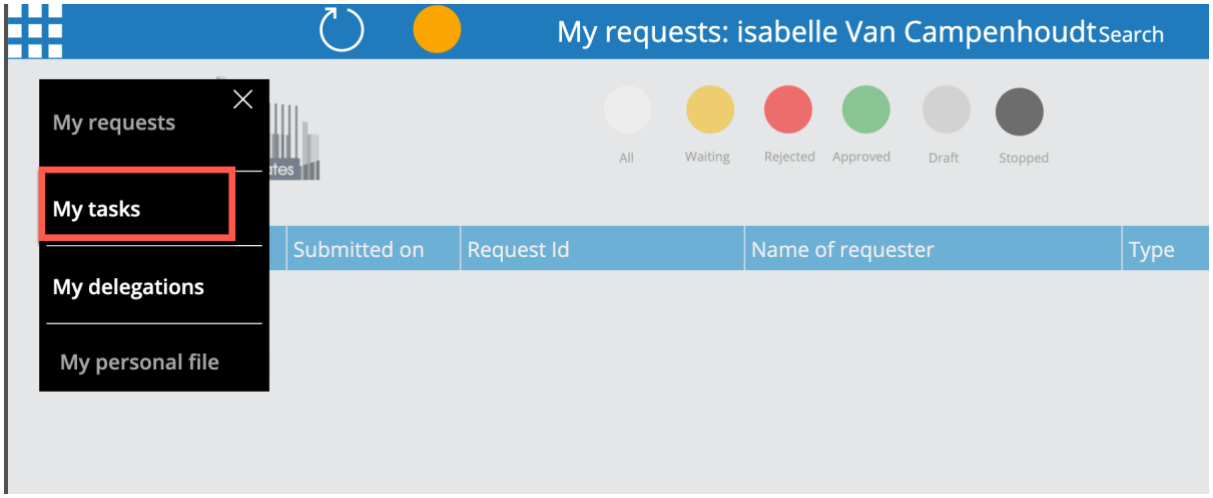


This person is probably not an officer, so that she won't access the Workflow Control Center. But she can approve in the My Dashboard. If we approve, the waiting site will switch to the next step:

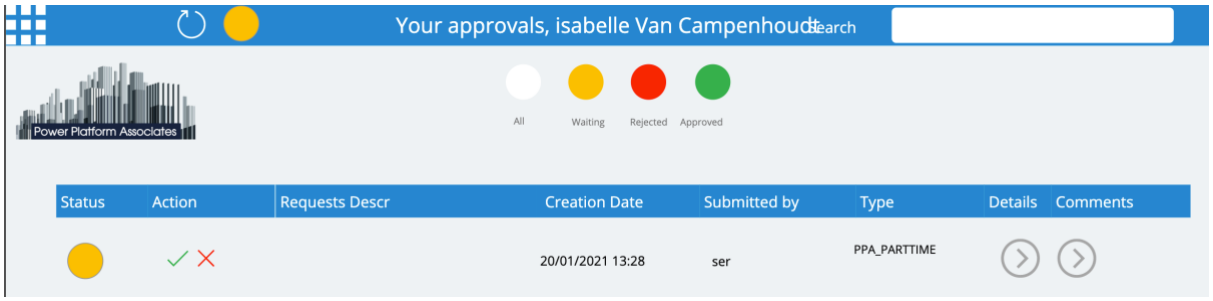


Using the BPM Toolkit My Dashboard Tasks

If this user (here: ivc) switches to her My Dashboard, she can click the My tasks menu item:

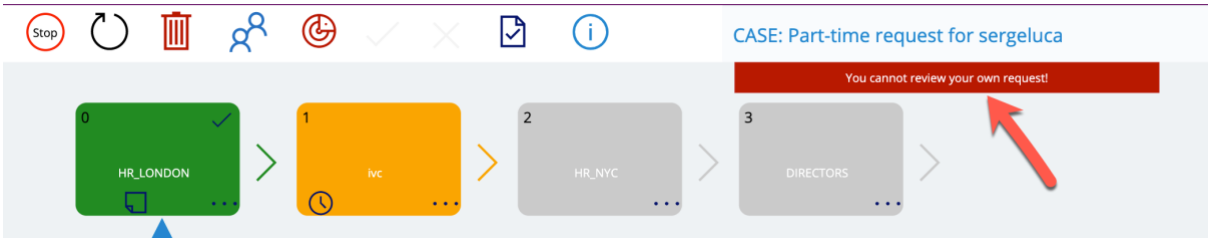


…and she will see her pending tasks:



She can accept/reject, see the request details or even see the comments of the previous approvers:

It is also important to mention that many businesses (like HR) don't allow you to accept/reject a request to you submit. If you followed the Setup guide instructions, you should see this warning message:



In test mode, we allow it because one of the BPM Toolkit parameters is set to Yes by one of the flows that you started during the setup (the flow is **BPM Toolkit – Configuration)**

BPM Parameters

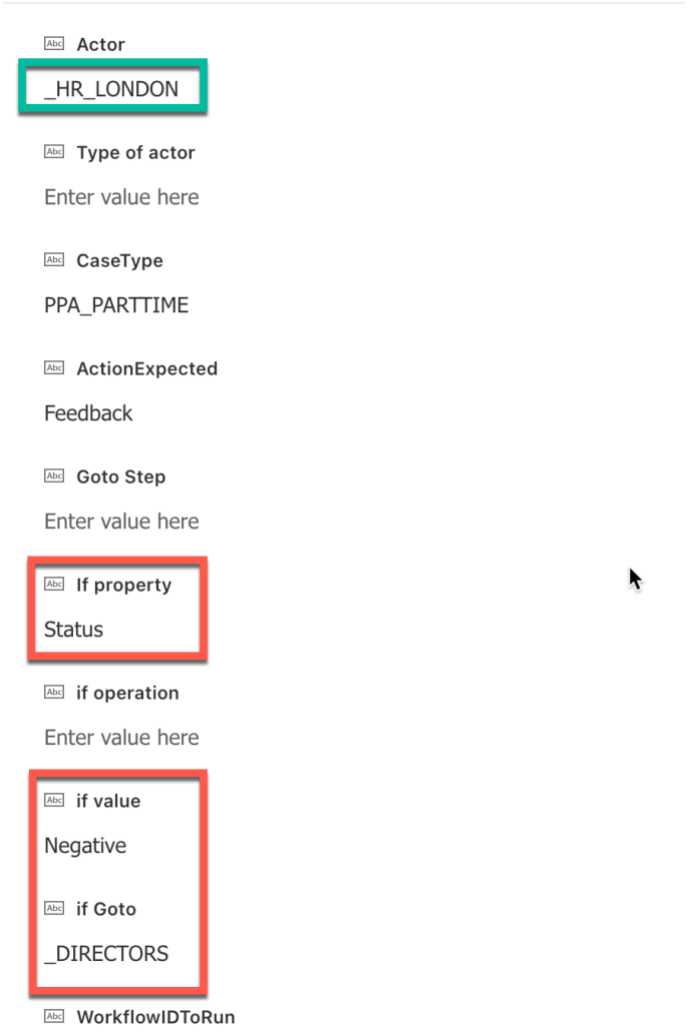
Title	Description	ParamName	ParamValue
	If "No" : users cannot see the workflow approval panel if they want to approve their own request (or a request submitted on their own behalf). No should be the default value in production. "Yes" can be used in Test	AllowSelfValidation	Yes

If you switch the ParamValue to No (which should be the value in production), you will get the following error message when you display the Workflow Panel:

Implementing GO TO (automatic workflow redirection)

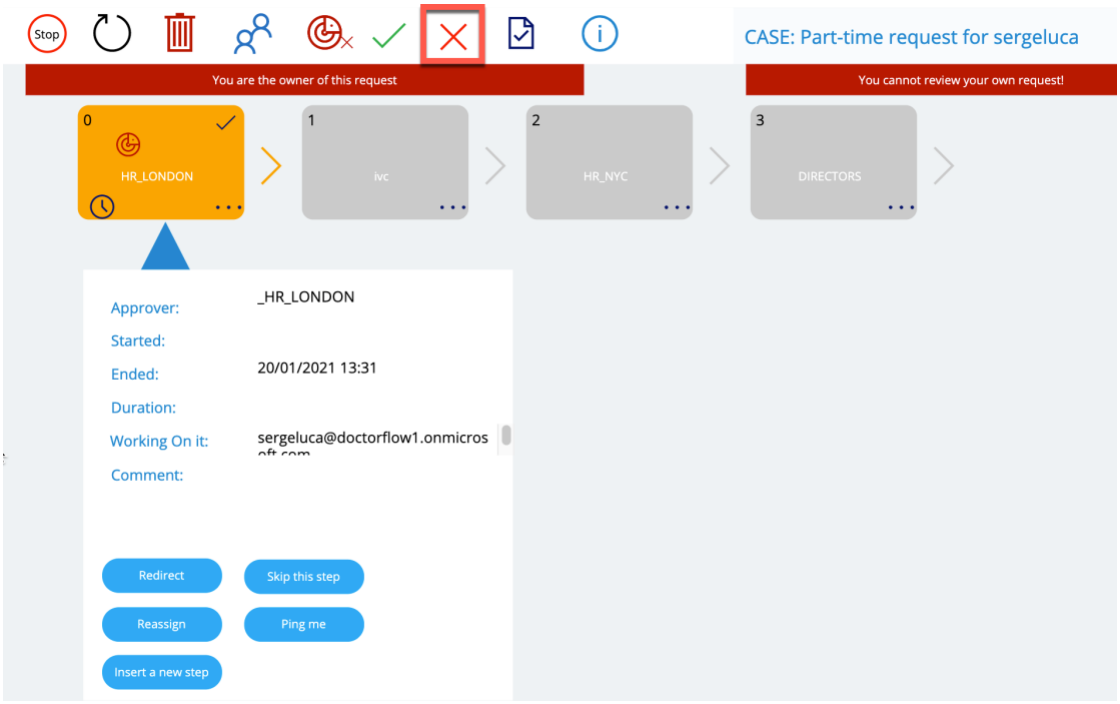
Let's take our previous Meta workflow. If the role HR_LONDON rejects the request, we want the system to automatically redirect the process to DIRECTORS.

Go to the Meta workflow SharePoint list edit the HR_LONDON role:

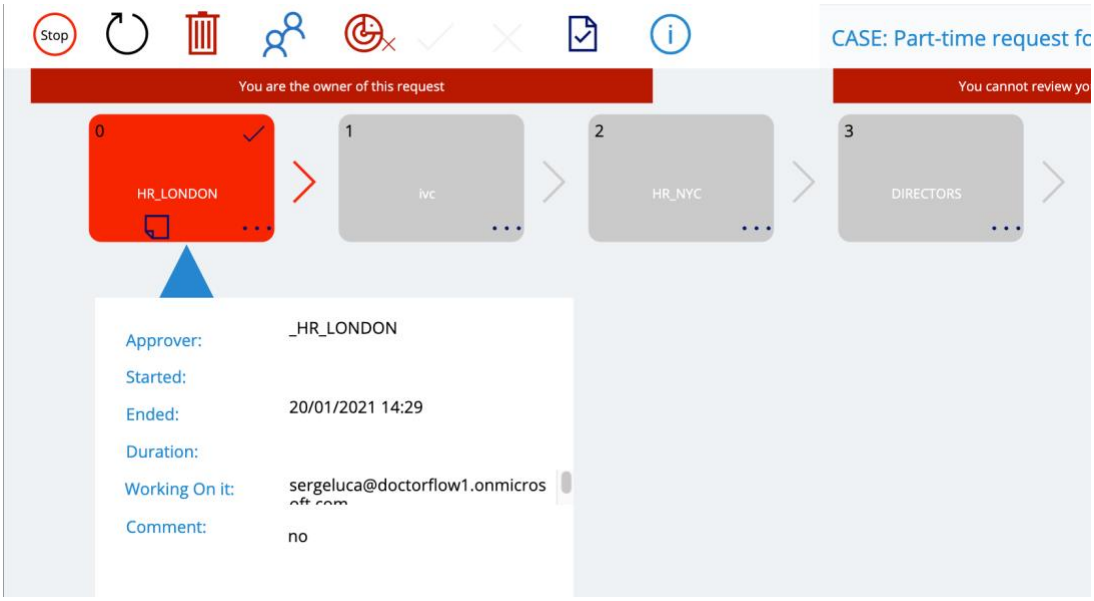


Save your change.

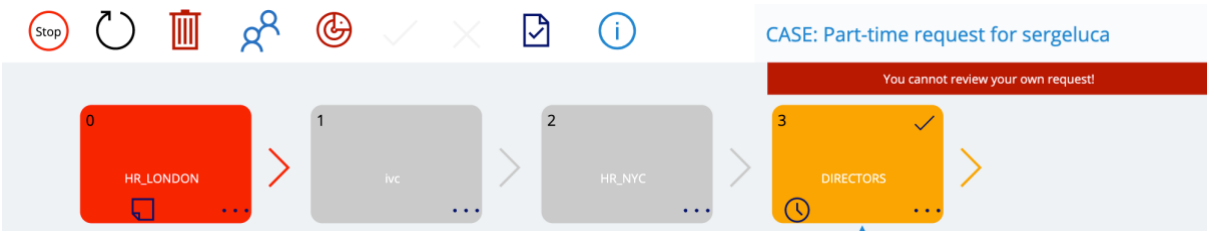
Redirect your previous process to Step 0 and reject:



Then the current step will become Red (meaning "rejected"):



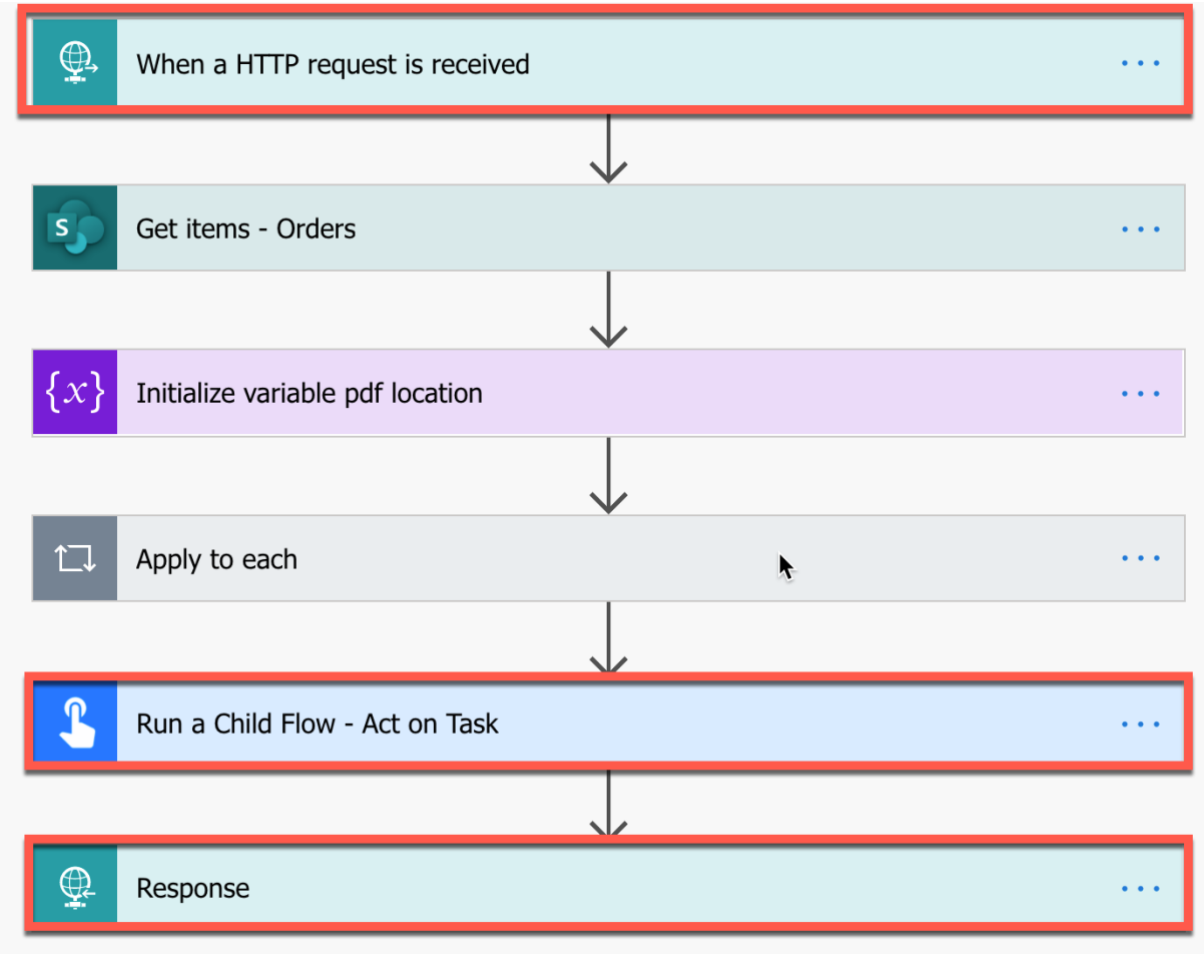
…and after 20 seconds (you should refresh the screen), it will move directly to the role Directors:



Creating custom actions

The out of the box actions of the BPM Toolkit are approve/reject/review. We can create custom action to do whatever you want, like document creation, RPA (Robotic Process Automation), you name it….

To create a custom action in this version of the BPM Toolkit, you must create a web service flow, a flow with a trigger **When a HTTP request is received,** and a **Response** action as illustrated below:

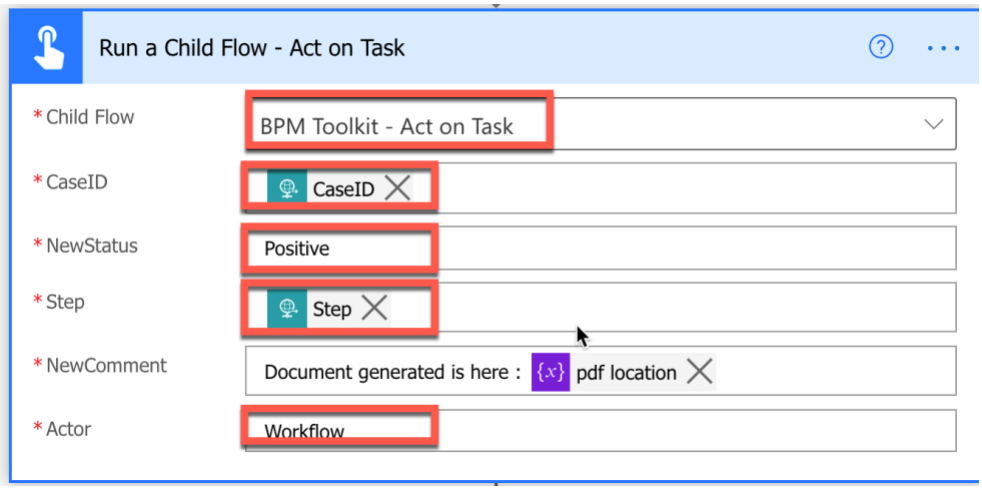


The schema of the trigger must be:

```
{
   "type": "object",
   "properties": {
      "CaseID": {
         "type": "string"
      },
      "Step": {
         "type": "string"
```

```
    }
  }
}
```

And before the Response action, you are supposed to call the flow **BPM Toolkit – Act on Task** to alert the workflow runtime:

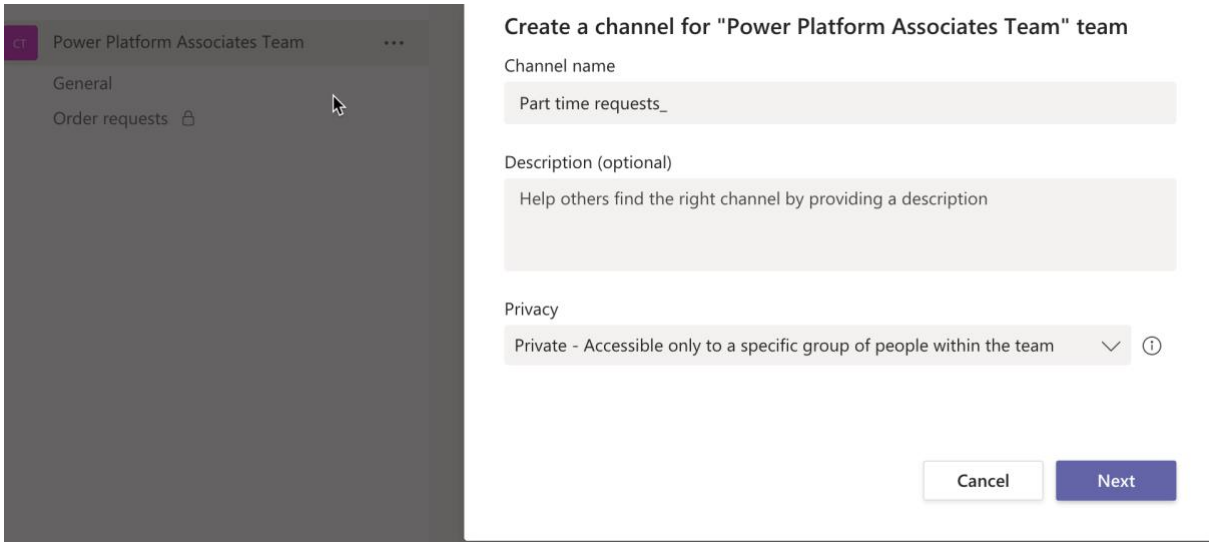


To use **When a HTTP request** and **Response**, you need a premium license that covers the whole company. The recommendation is to buy a per-flow license (500$/month), giving you five premium flows. Additional flows cost 100$/month.

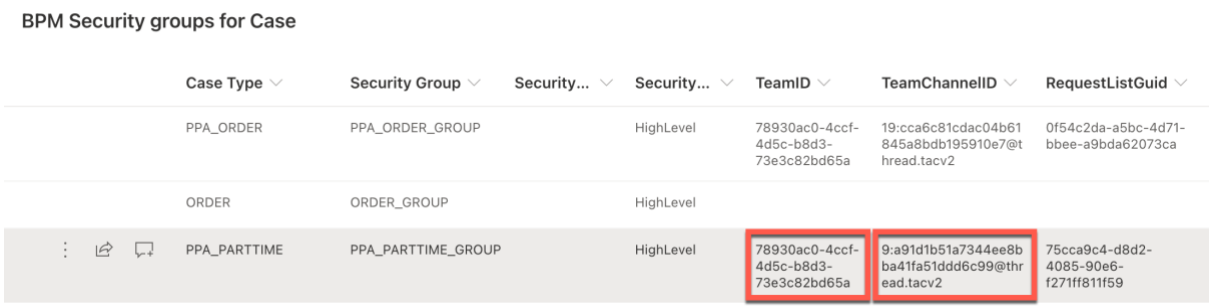
In the release version of the BPM Toolkit, we will provide extra parameters to make more general and reusable service flows.

BPM Toolkit Teams Integration

The first level of MS Teams integration is provided with this version of the BPM Toolkit. The idea is that for each type of request, a dedicated Teams channel will host the conversations. Typically, if the team in charge of Part-time requests need a safe/confidential place for discussing the Part-time cases, you can create a private channel for this type of requests:

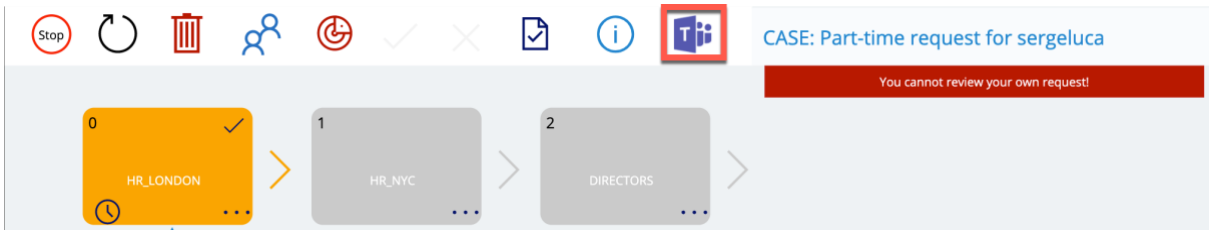


Now retrieve your Teams id and Channel id and store these values in the SharePoint list BPM Security groups for Case in your Case Type row:

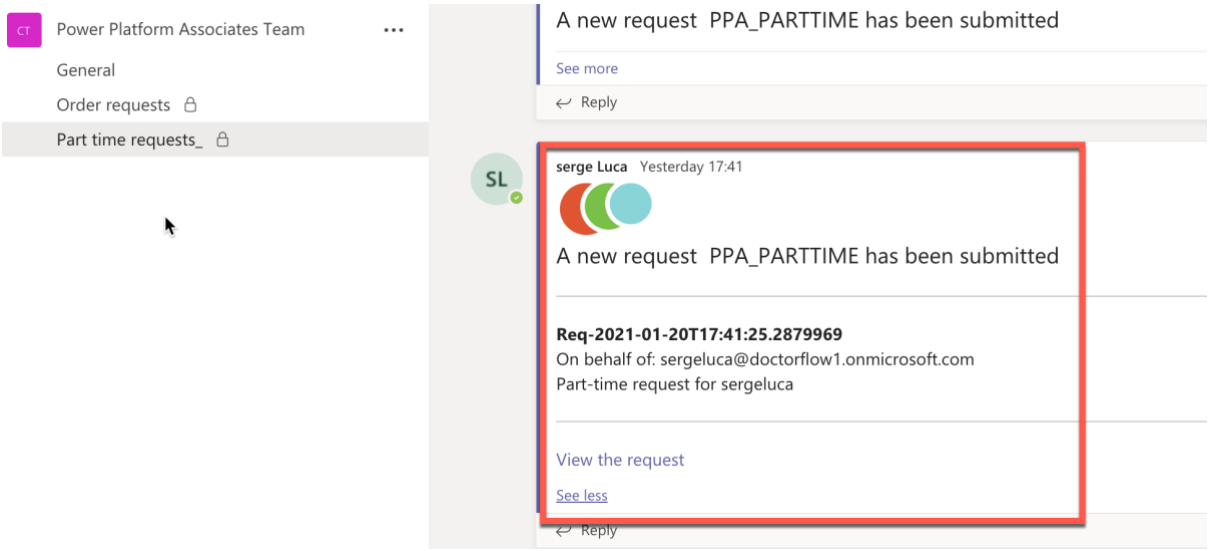


Now, if you submit a new PPA_PARTIME request from your Power Apps application, a discussion in the Teams channel will be created.

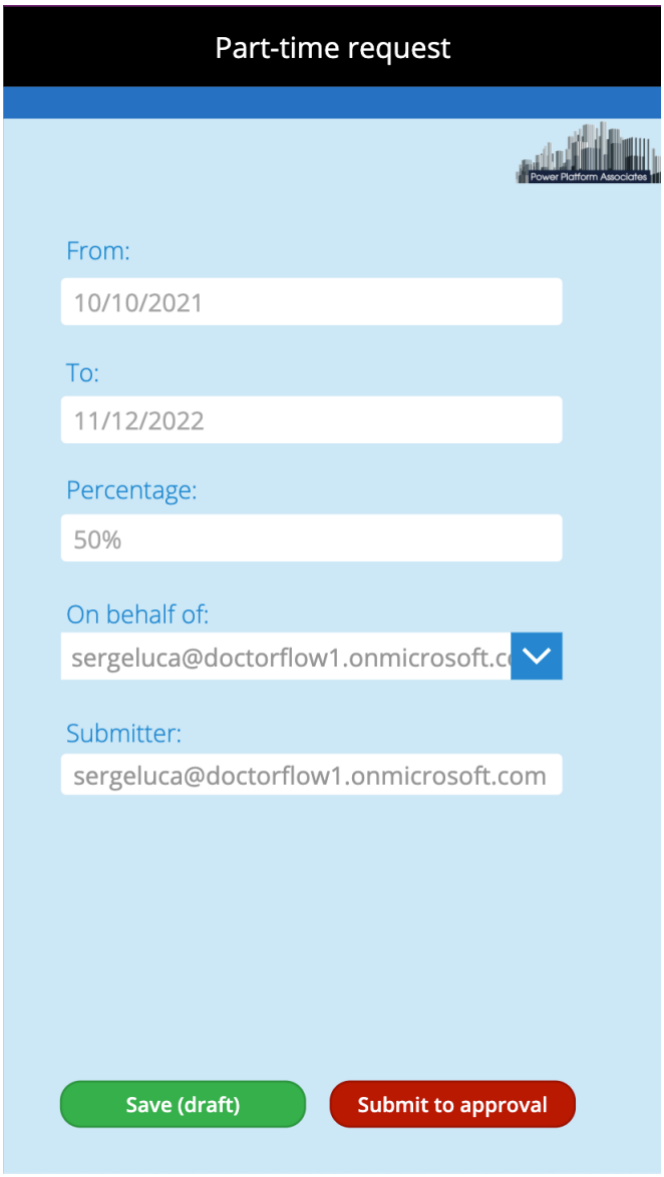
In the Workflow Panel, you will now see the Teams icon pointing to the request conversation:



If you click this Teams icon, you will be redirected to the conversation:



In this conversation, if you click “View the request” the system will display the request details:



Editing request information

One of the questions is: when can the users edit their request? Or who can edit the requests? The officers? Only when the request is in draft mode? When the workflow is started? It depends on the request. We have successfully tested several options to integrate into the BPM Toolkit, but we are currently trying to make it more performant for the next release.

Another topic is how do we manage the attachments? This will also be part of the next release.

Power Platform licenses needed

End users only need standard Office 365 licenses
To deploy, you need a premium license
To create and deploy custom actions, you need premium licenses. The Per-flow license (500$/month) covers the whole company up to 5 flows
To use RPA, you need a premium license + an RPA license.
The BPM Toolkit is open source and free.