

# Intellectual Property Registration Management

Creators Low Code App Build Lab Guide

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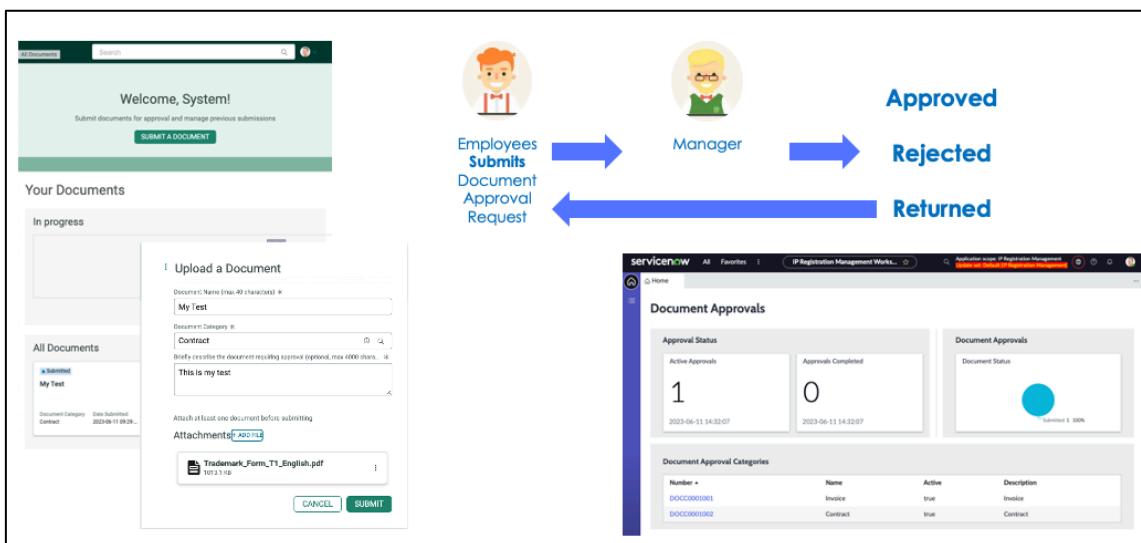
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## Lab Overview

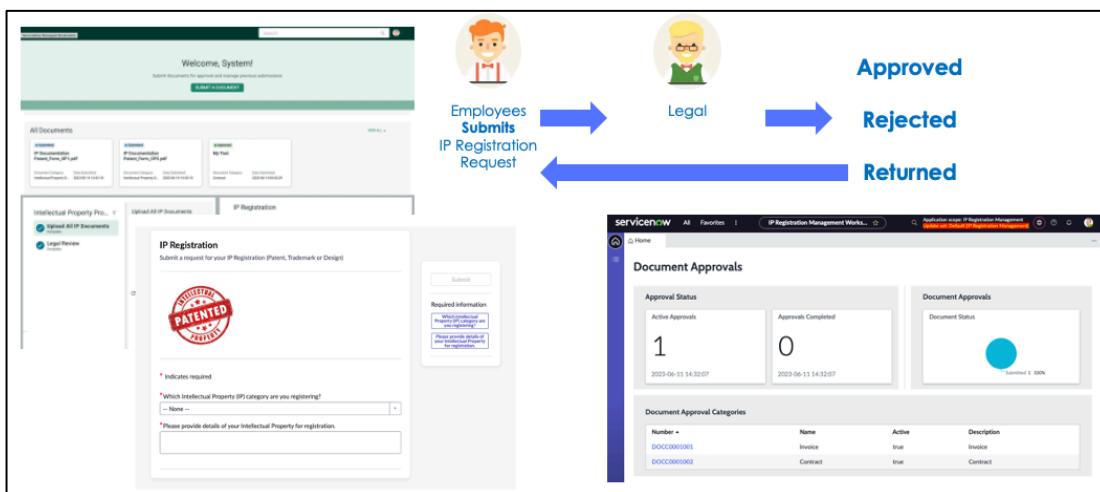
In our lab scenario, we will play the Innovation Center of Excellence (iCOE) team helping the organization to automate business processes via Low Code Application build. The organization most often have employees inventing new technology, ideas, or design, and to protect the innovations, the organization would like to encourage innovators to register their Intellectual Property (IP), trademarks or designs. As iCOE, we will be helping the organization to build an application that manages IP registration. What you will learn in this lab:

- **App Engine Studio** – The Low Code App Build Tool
- **App Template: Document Approval** – Pre-Built and Configurable App Contracts
- **Process Automation Designer** – Prescriptive Playbook for Guidance
- **App Engine Management Center** – Low Code Governance (Demo)

We will build the app from the Document Approval App Template:



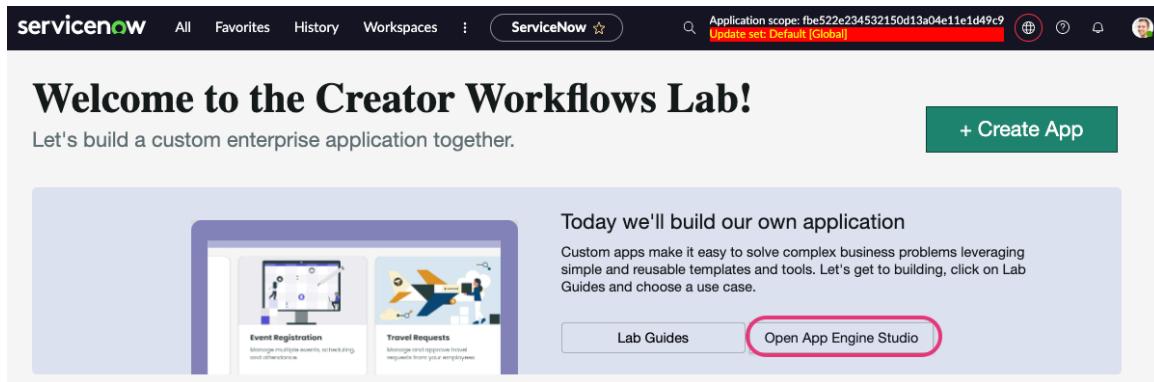
We will extend the app template with updated data tables, new workflows, and an updated user Portal to track their IP Registration status:



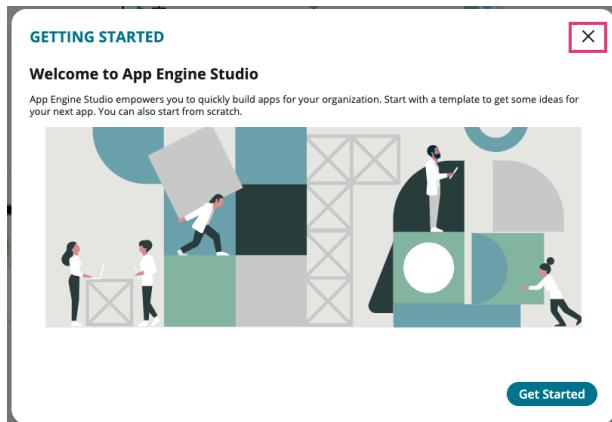
## Exercise 1: Build the Base App from App Template and Test

### Create the IP Registration Management Application from an App Template

1. Let's begin our ServiceNow Creators Low Code journey by logging into the ServiceNow Lab Instance. Once logged in, click the **Open App Engine Studio** button to launch App Engine Studio (AES) in a new tab. AES is ServiceNow's low code application built developer interface.



2. Click X to close the GETTING STARTED dialog.

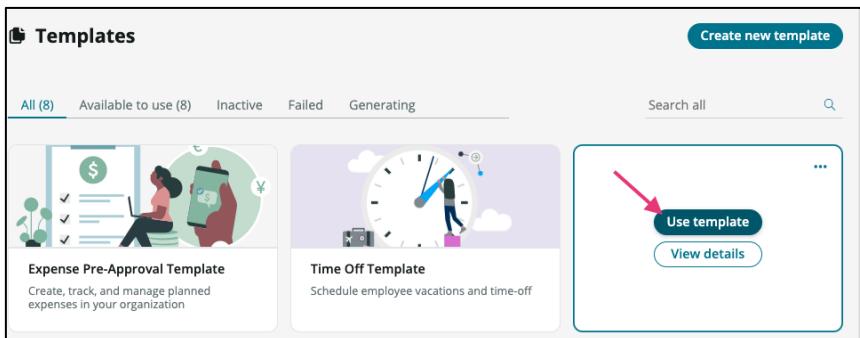
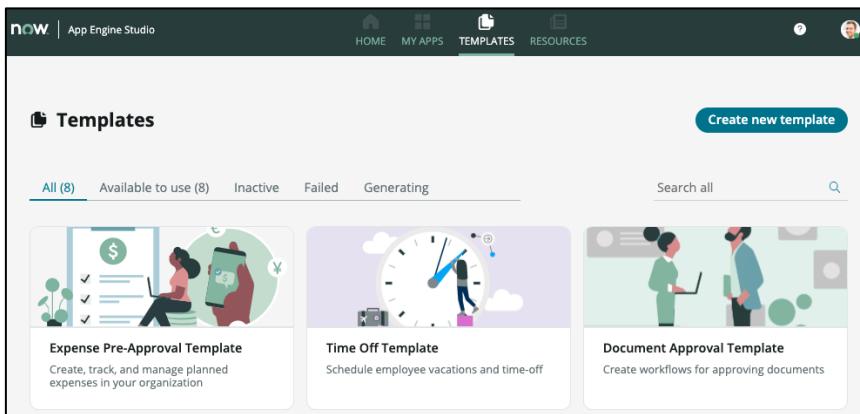


3. Click **Template** from the top menu bar.



4. We will build the application from an out-of-the-box (OOTB) low code application template. Using this methodology, the data model, user experience, logic and automation, security components are prebuilt within the template which will save us time from building from

scratch. So, we will adding configurations, updates, and new components to tailor the app to our purpose. Hover over **Document Approval Template**, and click **use template**.



This will initiate the application build from the OOTB app template.

5. On the Create App page, **Name** the app as **IP Registration Management**, **Description** as **Managing IP registration requests**. Optionally, upload an image to be used for the application logo. Click **Continue**.

**CREATE APP**

### Let's use this template to create your new app

Add a name and a description to make this app your own. You can also add a logo to represent your app.

Name \*

Description

Drag app logo or browse to upload

BMP, GIF, ICO, JPEG, JPG, PNG, SVG

Cancel
Continue

**CREATE APP**

### Let's use this template to create your new app

Add a name and a description to make this app your own. You can also add a logo to represent your app.

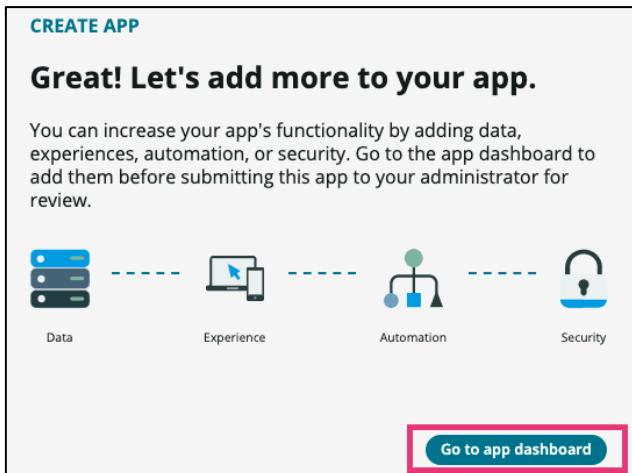
Name \*

Description

Remove image

Cancel
Continue

Once the app is created, click **Go to App Dashboard**. We have successfully created a scoped application on the Now platform called IT Procurement Application.



6. Review the pre-built application construct. ServiceNow Low Code application has 4 components, Data (tables), Experience (forms, portals, workspaces, mobile, record producer, etc), Logic and Automation (process and integration), and Security (user roles).

## IP Registration Management

[Source control](#) [Submit](#) [...](#)

A. (19) D... (3) Experie... (10) Logic and automat... (3) Secur... (3) Search all

**Data** [+ Add](#) [See all \(3\)](#)  
Store information in your app

Icon	Name	Type	Description	Last edited	Action
Document Approval	Table	Table	Table is a way to store your ...	2023-06-11 08:06:58	<a href="#">PREVIEW</a> <a href="#">...</a>
Document Approval Categ...	Table	Table	Table is a way to store your ...	2023-06-11 08:06:57	<a href="#">PREVIEW</a> <a href="#">...</a>
Document Approver	Table	Table	Table is a way to store your ...	2023-06-11 08:06:54	<a href="#">PREVIEW</a> <a href="#">...</a>

**Experience** [+ Add](#) [See all \(10\)](#)  
Create interfaces for users to interact with the app

Icon	Name	Type	Last edited	Action
Document Approval   Defa...	Form	Form	2023-06-11 08:08:16	<a href="#">...</a>
Document Approval   Portal	Form	Form	2023-06-11 08:07:48	<a href="#">...</a>
Document Approval Categ...	Form	Form	2023-06-11 08:07:28	<a href="#">...</a>

**Logic and automation** [+ Add](#) [See all \(3\)](#)  
Add automated workflows to improve productivity

Icon	Name	Type	Description	Last edited	Action
Document Approval - Mast...	Flow - record	Flow	It is the master flow for the ...	2023-06-11 08:08:14	<a href="#">...</a>
Document Approval Notific...	Email	Email		2023-06-11 08:08:10	<a href="#">...</a>
Single Stage Approval	Flow	Flow	This is a demo flow for docu...	2023-06-11 08:08:02	<a href="#">...</a>

**Security** [+ Add](#) [See all \(3\)](#)  
Control access to your app

Icon	Name	Type	Description	Last edited	Action
approver	Role	Role	This is the approver for the ...	2023-06-11 08:07:52	<a href="#">...</a>
admin	Role	Role	This is the admin role for th...	2023-06-11 08:07:35	<a href="#">...</a>
submitter	Role	Role	This is the submitter role for...	2023-06-11 08:07:34	<a href="#">...</a>

## Users Role Configuration

1. Before we edit and configure the application, let's review the user roles (approver, admin, submitter) under **Security** and configure platform users with access roles for testing.

Click the **Security** tab, and click the **admin**

The screenshot shows the ServiceNow interface for the 'IP Registration Management' application. At the top, there are tabs for 'All (19)', 'Data (3)', 'Experience (10)', and 'Security (3)'. The 'Security (3)' tab is highlighted with a red circle. Below the tabs, there is a search bar labeled 'Search security' with a magnifying glass icon. The main content area is titled 'Security' and sub-titled 'Control access to your app'. It lists three roles:

User	Role	Description	Last Edited	Actions
approver	Role	This is the approver for th...	Last edited 2023-06-11 08:07:52	...
admin	Role	This is the admin role for ...	Last edited 2023-06-11 08:07:35	...
submitter	Role	This is the submitter role f...	Last edited 2023-06-11 08:07:34	...

Review the details for the admin user role. Note the role name as we will be referencing it for assigning the application access roles to the platform users. The user role name is of format **x\_snc\_ip\_registr\_xxx.admin**, where **xxx** may be different on your instance.

App Home IP Registration Management You need to elevate your role to security\_admin to make modifications X ▾

admin Close Save

### General

Name ⓘ **x\_snc\_ip\_registr\_2.admin** ←

Description ⓘ This is the admin role for the Document Approval App. An user with this role can create, read, write and delete in the tables document approval and

Scope ⓘ IP Registration Management

### Experience

Select All

IP Registration Management Portal

IP Registration Management Workspace

### Data

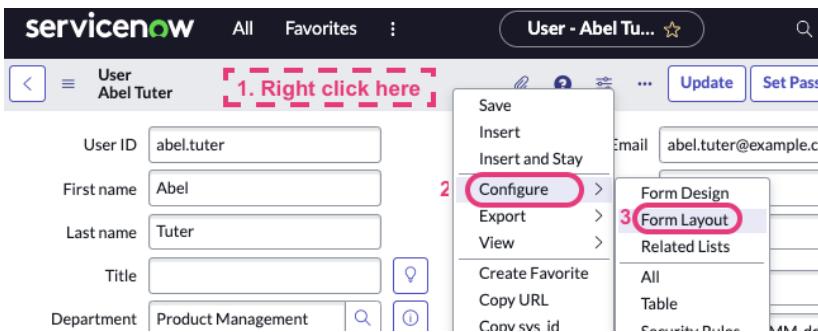
	Create	Read	Write	Delete
Document Approval	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Document Approver	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Document Approval Category	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Click the **Close** button to close the admin role. Repeat the same for user and approver roles and note the role names.

7. Return to the main ServiceNow instance tab in the browser. From ServiceNow home page, search for **user admin** from All navigation search bar. Click **Users**. This is open the list of users configured on the ServiceNow platform.

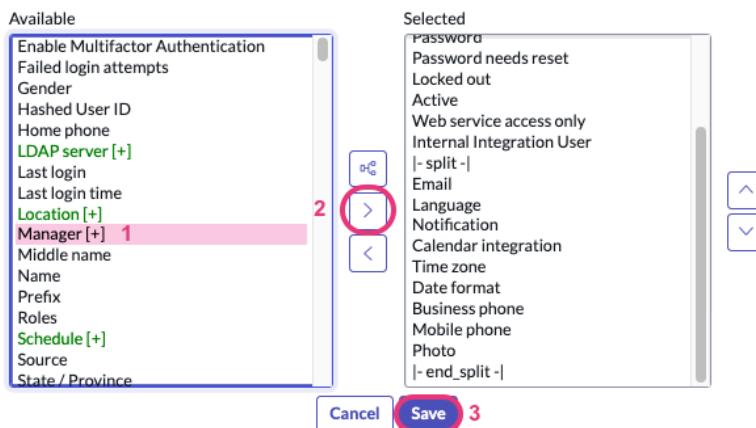
User ID	Name	Email	Active	Created	Updated
abel.tuter	Abel Tuter	abel.tuter@example.com	true	2012-02-18 03:04:52	2022-11-17 00:59:22
abraham.lincoln	Abraham Lincoln	abraham.lincoln@example.com	true	2013-07-24 00:15:54	2022-11-17 00:59:23
adela.cervantsz	Adela Cervantsz	adela.cervantsz@example.com	true	2012-02-18 03:04:50	2022-11-17 00:59:19
admin	System Administrator	admin@example.com	true	2007-07-03 18:48:47	2023-06-11 06:38:06

8. Open the record with UserID as **abel.tuter**. **Right click** on the grey area next to the record name, select **Configure** and **Form Layout**.



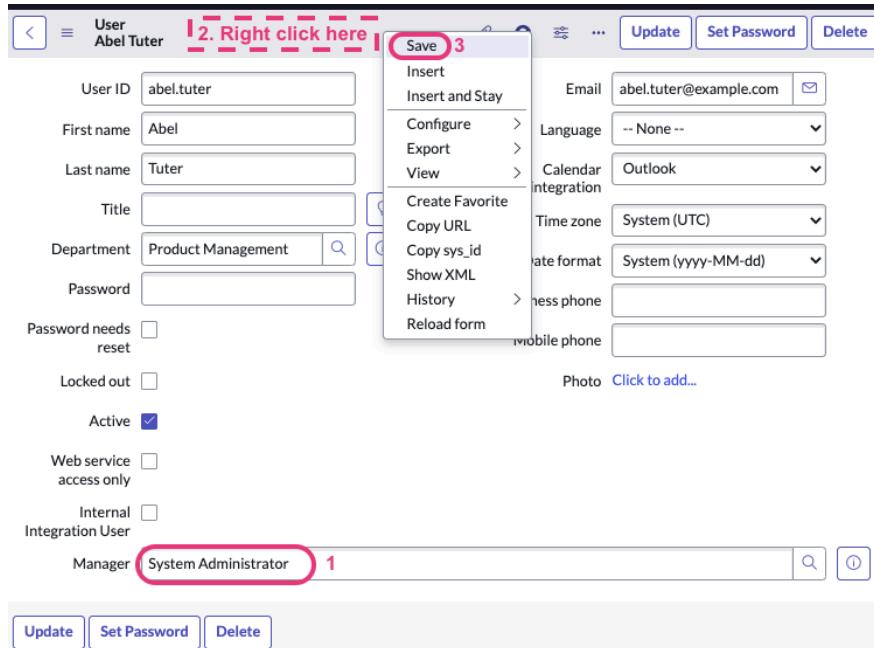
Click **Edit this section** in Global, this will allow us to edit the layout.

From the available lis, look for **Manager [+]**, select it, click the > (right arrow) and click **Save**.

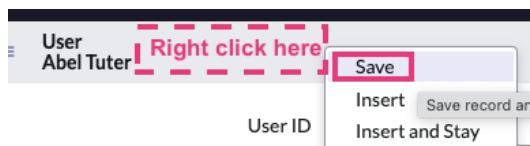


This will add the user's manager field to the record view.

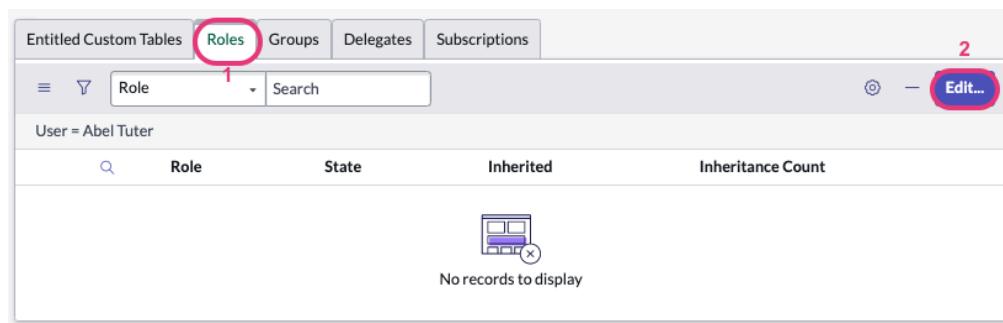
Add **System Administrator** as Abel Tuter's manager, then **right click** on the top grey bar, click **Save** to save the changes.



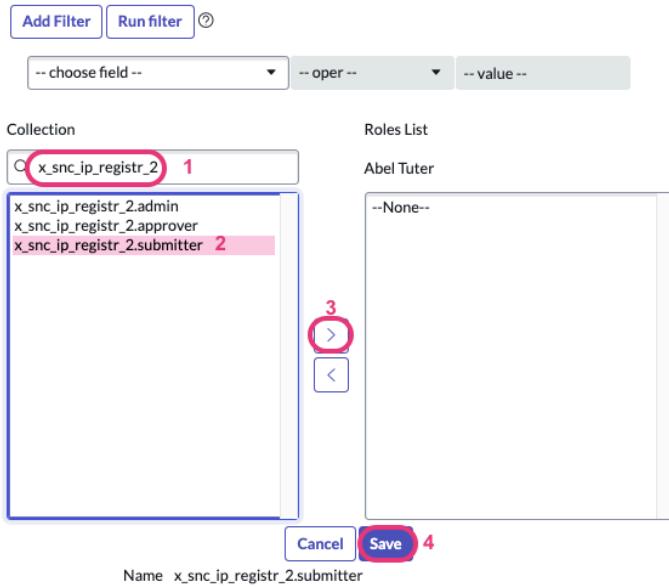
Right click on the top grey bar, and **Save** the changes.



Select the **Roles** tab in the related list at the bottom of the record. Then click **Edit...** to edit Abel Tuter's user roles.



Search for the roles starting with **x\_snc\_ip\_registr\_** from the **collection** list, select the **submitter** role (the role name that you see in your instance maybe different from the one showing in the screencapture below), click the **>** (right arrow), and click **save**.



This will add the submitter application role to Abel Tuter. Now Abel Tuter is provided access to submit requests on the application. Click **Update** to save the changes to Abel Tuter's user record.

User - Abel Tu... star

User Abel Tuter

**Update** **Set Password** **Delete**

① Adding Role canvas\_user to abel.tuter

User ID	abel.tuter	Email	abel.tuter@example.com
First name	Abel	Language	-- None --
Last name	Tuter	Calendar integration	Outlook
Title		Time zone	System (UTC)
Department	Product Management	Date format	System (yyyy-MM-dd)
Password		Business phone	
Password needs reset	<input type="checkbox"/>	Mobile phone	
Locked out	<input type="checkbox"/>	Photo <a href="#">Click to add...</a>	
Active	<input checked="" type="checkbox"/>		
Web service access only	<input type="checkbox"/>		
Internal	<input type="checkbox"/>		
Integration User			
Manager	System Administrator	<a href="#">Search</a> <a href="#">Edit...</a>	

**Update** **Set Password** **Delete**

**Related Links**

- [Add to Update Set](#)
- [View linked accounts](#)
- [View Subscriptions](#)
- [Reset a password](#)

Entitled Custom Tables	Roles (2)	Groups	Delegates	Subscriptions
	<input type="checkbox"/> <a href="#">Role</a> <a href="#">Search</a>			<a href="#">Actions on selected rows...</a> <a href="#">Edit...</a>
User = Abel Tuter				
	<input type="checkbox"/> <a href="#">Role</a> <a href="#">Search</a>	State	Inherited	Inheritance Count
		Active	true	1
		Active	false	<span style="color: red;">← this should be added</span>

9. Next, open the admin user record by click the **admin** User ID from the user list.

User ID	Name	Email	Active	Created	Updated
abel.tuter	Abel Tuter	abel.tuter@example.com	true	2012-02-18 03:04:52	2023-06-11 10:19:40
abraham.lincoln	Abraham Lincoln	abraham.lincoln@example.com	true	2013-07-24 00:15:54	2022-11-17 00:59:23
adela.cervantsz	Adela Cervantsz	adela.cervantsz@example.com	true	2012-02-18 03:04:50	2022-11-17 00:59:19
admin	System Administrator	admin@example.com	true	2007-07-03 18:48:47	2023-06-11 06:38:06

The admin user record opens, from the related tables at the bottom of the page, select **Roles** tab, and click the **Edit** button. We will add the new application roles to the administrator so that during our configuration and build of the app, we can test it as administrator.

User  
System Administrator

---

User ID: admin

First name: System

Last name: Administrator

Title: System Administrator

Department: Finance

Password:

Password needs reset:

Locked out:

Active:

Web service access only:

Internal Integration User:

Email: admin@example.com

Language: -- None --

Calendar integration: Outlook

Time zone: System (UTC)

Date format: System (yyyy-MM-dd)

Business phone:

Mobile phone:

Photo: [Click to add...](#)

---

1
2

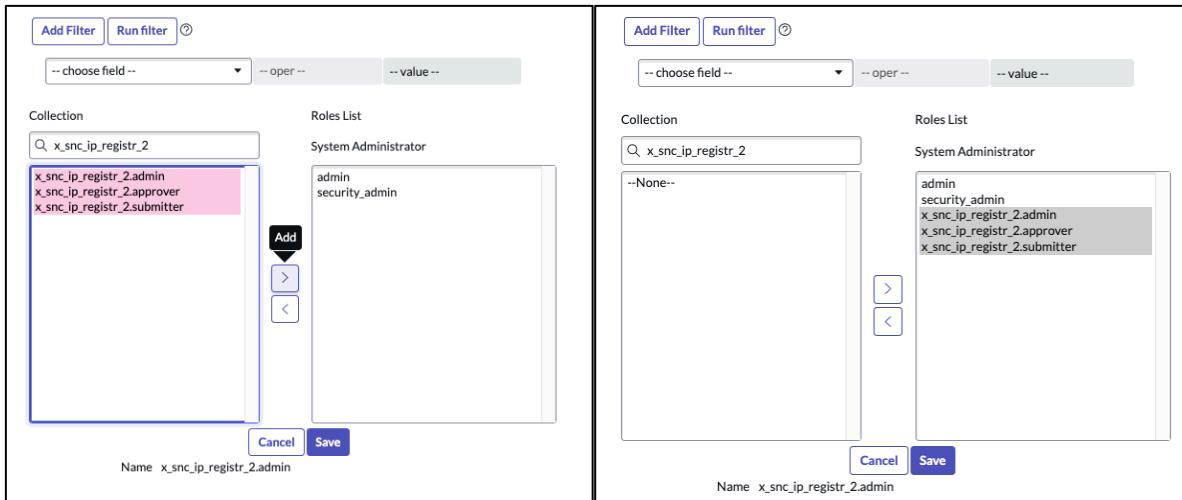
**Related Links**

- [Add to Update Set](#)
- [View linked accounts](#)
- [View Subscriptions](#)
- [Reset a password](#)
- [Change password](#)

Entitled Custom Tables	<b>Roles (36)</b>	Groups (4)	Delegates	Subscriptions
------------------------	-------------------	------------	-----------	---------------

Role	State	Inherited	Inheritance Count
sn_ca.campaign_manager	Active	true	1

Search for **x\_snc\_ip\_registr\_**, add all the application roles (admin, approver, submitter), and **SAVE**.

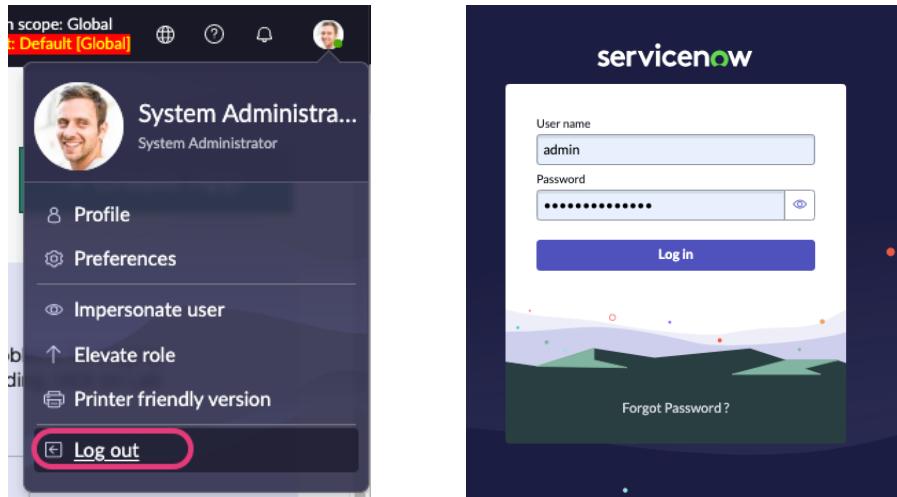


For testing purposes, also enter **System administrator** as the **Manager**. Click **Update** button to ensure that all changes are saved.

The screenshot shows the 'User' edit screen for a 'System Administrator' account. The 'Manager' field is populated with 'System Administrator' and has a red border around it. The 'Update' button at the bottom left is also highlighted with a red border. Other fields include User ID (admin), First name (System), Last name (Administrator), Title (System Administrator), Department (Finance), Password, Password needs reset (unchecked), Locked out (unchecked), Active (checked), Web service access (unchecked), Internal Integration (unchecked), and Manager (System Administrator). The right side of the screen shows email (admin@example.com), Language (None), Calendar integration (Outlook), Time zone (System (UTC)), Date format (System (yyyy-MM-dd)), Business phone, Mobile phone, and Photo (Click to add...).

10. For the updates to the admin user role to be effective, we will log out of the instance and log back in. To logout, click the user icon located on the top right, and select **Log out**.

To login, add “</login.do>” to the base of the instance url (i.e. <http://YourInstanceID.service-now.com/login.do>). You will need your credentials to login, where the user name is **admin**, and password is the admin password that is provided to you at the beginning of this lab.



## Explore and Test the App Experience

1. Click the **Open App Engine Studio** button to return to AES. Click **on IP Registration Management** app icon to open the app.
2. From **Experience** tab, look for **Portal**, and click **preview**. This will open up the IP Registration end user portal in a new browser tab.

**IP Registration Management**

All (19) Data (3) **Experience (10)** More ▾

Search experience

**Experience** [Add](#)  
Create interfaces for users to interact with the app

Icon	Name	Type	Last edited	Actions
Document Approval   Def...	Form		2023-06-11 08:08:16	...
Document Approval   Port...	Form		2023-06-11 08:07:48	...
Document Approval Categ...	Form		2023-06-11 08:07:28	...
Document Approval Categ...	Form		2023-06-11 08:07:21	...
IP Registration Manageme...	Workspace		2023-06-11 08:07:20	<a href="#">PREVIEW</a> ...
Document Approver   Wo...	Form		2023-06-11 08:07:17	...
Document Approval   Wor...	Form		2023-06-11 08:07:16	...
Document Approver   Def...	Form		2023-06-11 08:07:15	...
IP Registration Manageme...	Mobile experience		2023-06-11 08:07:04	...
IP Registration Manageme...	Portal	Document Approval Portal ...	2023-06-11 08:07:01	<a href="#">PREVIEW</a> ...

3. We will now try submit a document to understand the user experience of this app. Click **SUBMIT A DOCUMENT** button.

Welcome, System!

Submit documents for approval and manage previous submissions

**SUBMIT A DOCUMENT**

From the **Upload a Document** pop up, enter the **Document Name** as **My Test Document**, **Category** as **Contract**, and a **brief description**. Then click **+ADD FILE**.

Select any document of type **.pdf** from your local drive and click **UPLOAD**. It doesn't matter what document you uploaded as we are just testing the app.

**Upload a Document**

Document Name (max 40 characters) \*

Document Category \*

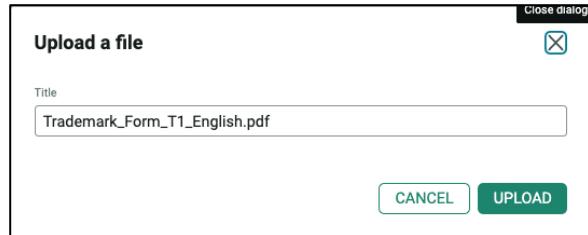
Briefly describe the document requiring approval (optional, max 4000 chara... \*)

Attach at least one document before submitting

Attachments [+ ADD FILE](#)

Add File

**CANCEL** **SUBMIT**



Click **SUBMIT**. And click **YES** to confirm you want to submit. Your document is submitted for approval, click **VIEW MY DOC**.

**Upload a Document**

Document Name (max 40 characters) \*

Document Category \*

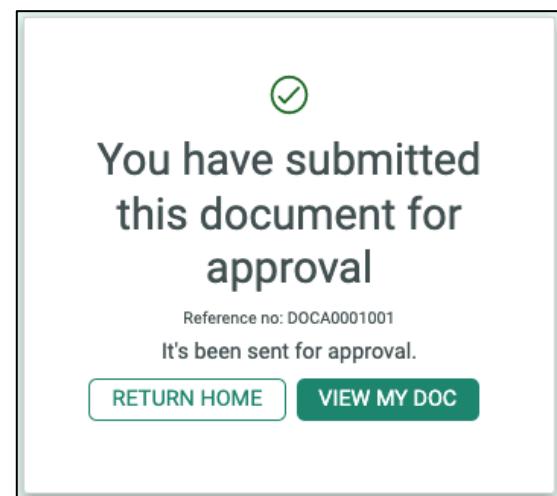
Briefly describe the document requiring approval (optional, max 4000 chara... \*)

Attach at least one document before submitting

Attachments [+ ADD FILE](#)

 Trademark\_Form\_T1\_English.pdf 1013.1 KB

**CANCEL** **SUBMIT**



Note that the status of the document is submitted, and all the details of your request including your attachment is accessible here. Click **Home** from the top left corner to return to the portal home page.

From the home page, you will also see your "My Test" document listed in **All Documents**.

The image contains two side-by-side screenshots of the ServiceNow interface.

**Left Screenshot (Document Detail View):**

- Header:** Home > DOCA0001001
- Title:** My Test
- Description:** This is my test
- Details:**
  - Number: DOCA0001001
  - Document Type: Contract
  - Status: Submitted
  - Created: 2023-06-11 09:29:47
- Activity Tab:** Activity (selected) and Attachments
- Add a comment:** Text area with placeholder "Type your Work notes (Private) here".
- Activity Log:**
  - System Administrator: Attachment - 2023-06-11 09:29:01 (File: Trademark\_Form\_T1\_English.pdf, Size: 1013.1 KB)

**Right Screenshot (Your Documents Dashboard):**

- Welcome:** Welcome, System!
- Header:** All Documents, Search
- Main Content:**
  - In progress:** Placeholder image of a document icon with a red X, text: You have no documents waiting for approval. Get started by...
  - All Documents:**
    - Card:** My Test (Status: Submitted)
    - Details:** Document Category: Contract, Date Submitted: 2023-06-11 09:29...

4. Return to AES, and from **experience** tab, let's **preview** the workspace.

The screenshot shows the ServiceNow interface for 'IP Registration Management'. At the top, there's a navigation bar with icons for user profile, settings, source control, and submit. Below the bar, tabs include 'All (19)', 'Data (3)', 'Experience (10)' (which is selected and highlighted in blue), and 'More'. A search bar labeled 'Search experience' is also present.

The main content area is titled 'Experience' with a '+Add' button. It lists ten items, each with a small icon, name, type, and last edit date. The items are:

- Document Approval | Def... Form Last edited 2023-06-11 08:08:16
- Document Approval | Port... Form Last edited 2023-06-11 08:07:48
- Document Approval Categ... Form Last edited 2023-06-11 08:07:28
- Document Approval Categ... Form Last edited 2023-06-11 08:07:21
- IP Registration Manageme... Workspace Last edited 2023-06-11 08:07:20
- Document Approver | Wo... Form Last edited 2023-06-11 08:07:17
- Document Approval | Wor... Form Last edited 2023-06-11 08:07:16
- Document Approver | Def... Form Last edited 2023-06-11 08:07:15
- IP Registration Manageme... Mobile experience Last edited 2023-06-11 08:07:04
- IP Registration Manageme... Portal Document Approval Portal ... Last edited 2023-06-11 08:07:01

A pink oval highlights the 'PREVIEW' button next to the workspace item.

The Workspace is for back office persona such as process agents, operations, to review, manage, update, fulfill user submitted requests. From the Documents Approval workspace, there is one Active Approvals, which is the request we just submitted.

The screenshot shows the ServiceNow IP Registration Management workspace. At the top, there's a navigation bar with 'All', 'Favorites', and a search bar containing 'IP Registration Management Works...'. A red banner at the top right states 'Application scope: IP Registration Management' and 'Update set: Default [IP Registration Management]'. The main area has a sidebar with a 'List' icon circled in red. The main content area displays the 'Document Approvals' dashboard. It includes two large boxes: 'Approval Status' (Active Approvals: 1, Approvals Completed: 0) and 'Document Approvals' (Document Status: 100%, Submitted 1). Below these are sections for 'Document Approval Categories' and a table listing categories with their details.

Number	Name	Active	Description
DOCC0001001	Invoice	true	Invoice
DOCC0001002	Contract	true	Contract

Click the **List** icon on the left side bar. From the List view of the workspace, you can review the full list of submitted requests. Click the request **Number** of the Document Approvals list to open the submitted request.

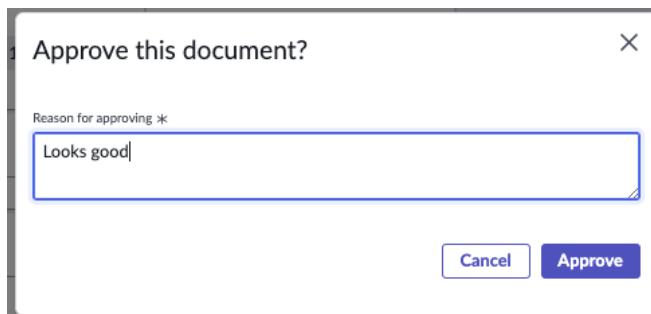
The screenshot shows the ServiceNow IP Registration Management workspace in List view. The sidebar has the 'List' icon highlighted with a red circle. The main content area shows a table of 'Document Approvals' with one item listed. The table columns are Number, Created, Submitter, Name, and Category. The single row shows DOCA0001002, 2023-06-11 14:31:23, System Administrator, My Test, and Contract.

Number	Created	Submitter	Name	Category
DOCA0001002	2023-06-11 14:31:23	System Administrator	My Test	Contract

Review the details of the Document Approval request. Since we have set the System Administrator's Manager as his/herself, we can Approve the request as System Administrator. Click the **Approve** button to complete the request. Note that there are other options such as decline the approval request, or return the document for the purpose such as asking for a revision before approval.

The screenshot shows a ServiceNow application window titled "IP Registration Management Works...". A document titled "My Test" is displayed, created on 2023-06-11 at 14:31:23 by a user named "System Administra...". The document is in the "Submitted" state and is categorized under "Contract". On the right side of the screen, there are three buttons: "Return", "Decline", and "Approve", with "Approve" being highlighted with a red box. Below these buttons are two panels: "Compose" (with a comment input field) and "Attachments" (listing a PDF file named "Trademark\_Form\_T1\_English.pdf" which is 1013.1 KB). The main document details panel includes fields for Name, Submitter, Category, State, Created date, Description, and Comments.

From the **Approve this document?** Pop up, enter **Looks good** as the **Reason for approving**, click **Approve**.



Note that the **State** has been updated to **Approved**, and the **Activity** log tracks the changes of the request.

**My Test**

Created: 2023-06-11 14:31... State: Approved Submitter: System Administra... Category: Contract

**Details**

**Document Approver**

Name: My Test  
Submitter: System Administra... Category: Contract  
State: Approved (Approved) Created: 2023-06-11 14:31:23  
Description: This is my test  
Comments:

**Compose**

Type your Comments here  
Everyone can see this comment Post Comments

**Activity**

- System Administrator: Looks good
- System Administrator: Field Changes: State Approved was Submitted
- System: Field Changes: State Submitted

Optionally, **refresh** the user **portal** page, and note that the request State is also updated from the portal view.

Welcome, S...

Submit documents for approval and ma...

SUBMIT A DOCU...

Your Documents

In progress

You have no documents v...

All Documents

Approved  
My Test  
Document Categ... Date Submitted  
Contract 2023-06-14 04:03...

**My Test**  
This is my test

**Details**

Number: DOCA0001002 Document Type: Contract Status: Approved (Approved) Created: 2023-06-11 14:31:23

**Activity**

Type your Work notes (Private) here POST WORK NOTES (PRIVATE)

System Notes: Work Notes • 2023-06-11 14:43:08  
2023-06-11 14:43:07 - System Administrator (Comments)  
Looks good

System Administrator Attachment • 2023-06-11 14:31:16  
Trademark\_Form\_T1\_English.pdf 1013.1 KB

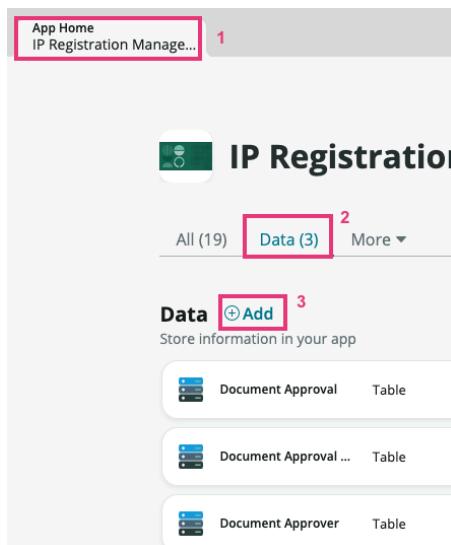
We now have good idea of what the Document Approval Application does, we will then start adding our App elements. **Close** both the app Portal browser tab, and the Workspace browser tab.

## Exercise 2: Creating and Updating Data Tables & Forms

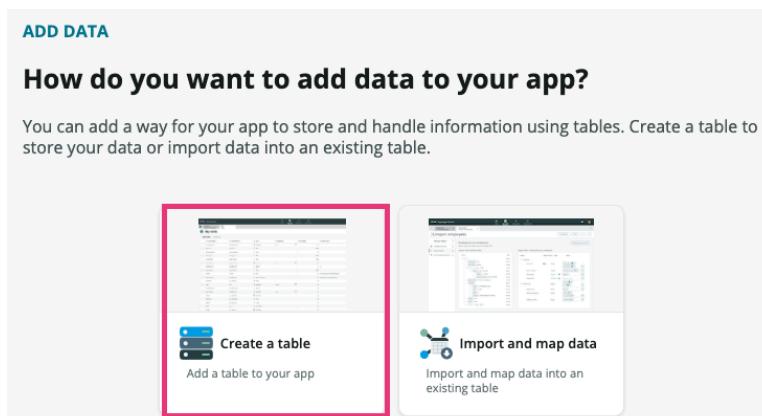
### Create the IP Registration Request Table

We will first create the data table that will be used for tracking Intellectual Property Registration requests, its assignment, status, etc.

1. Return to the App Home tab in AES. Click the **Data** tab. Click **+ Add** in the Data section to create a data table.



Select **Create a Table** and click **Begin**. We will extend the **Task** data model so select **Create from an existing table**. And Click **Continue**.



Search for the **Task [task]** table, select it and click **Continue**. We are extending the Task tables so we can use its default data fields and baked in capabilities (i.e. approval flows).

Enter **Table label** as **IP Registration** and note that the **Table name** will be automatically populated. **Select Auto number** of the table entries. Enter Auto numbering **Prefix** as **IPREG** and click **Continue**.

Source      2 Define      3 Summary

### ADD DATA

#### Now, let's get more info about your new table

Define the properties of your new table.

Table label *	IP Registration
Table name prefix *	x_snc_ip_registr_2_
Table name *	ip_registration
<input type="checkbox"/> Make extensible	
<input checked="" type="checkbox"/> Auto number	
Prefix *	IPREG
Starting number *	1000
Number of digits *	7
<input type="button" value="Cancel"/> <input style="background-color: #0070C0; color: white; border: 2px solid #0070C0; border-radius: 5px; padding: 5px; margin-left: 10px;" type="button" value="Continue"/>	

- Allow the **admin** role with **All** rights access **approver** role with **Read / Write** access and **submitter** role with **Create / Read / Write** access to the **IP Registration table**. Click **Continue**.

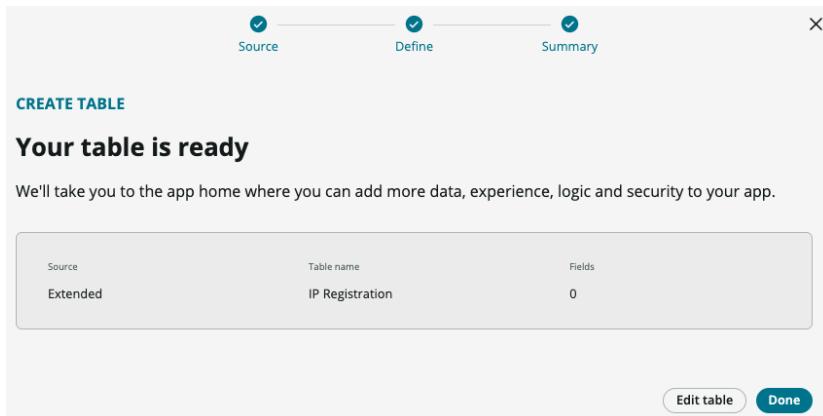
### ADD DATA

#### Let's add permissions to your table.

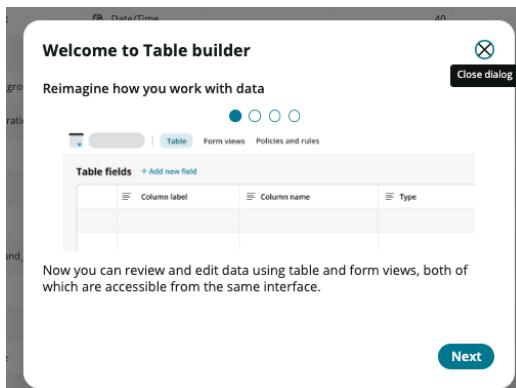
Create roles and define how much control each role has of this table. Note: at least one role needs to have 'read' access for you to 'preview' the data in your table.

Add a role						
Role Name	Description	All	Create	Read	Write	Delete
admin	This is the admin role for the Do	<input checked="" type="checkbox"/>				
approver	This is the approver for the docu	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
submitter	This is the submitter role for the	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

- When the table is ready, click **Edit Table**



If the Welcome to Table builder message pops up, click **Close dialog**



4. Since we have extended the IT Procurement Request table from the Task data table, there are 69 predefined data fields. We will be using some of these fields including:
  - Assigned to
  - Approval
  - Approval history
  - Description
  - Opened by (will be renamed to Requestor in this lab)
  - State
  - Etc.

Get familiar with the the extended data fields. The example below shows the default configuration of the **Approval** data field, where is this a Choice type of 4 choices.

IP Registration

Table fields + Add new field

Column label *	Column name *	Type *	Reference	Max length	Default
Active	active	True/False			true
Activity due	activity_due	Due Date			
Actual end	work_end	Date/Time			
Actual start	work_start	Date/Time			
Additional assignee list	additional_assignee_list	List	User		
Additional comments	comments	Journal Input			
Approval	approval	String 4 Choices		40	not required
Approval history	approval_history	Journal			
Approval set	approval_set	Date/Time			
Assigned to	assigned_to	Reference	User		
Assignment group	assignment_group	Reference	Group		
Business duration	business_duration	Duration			
Close notes	close_notes	String		4000	
Closed	closed_at	Date/Time			
Closed by	closed_by	Reference	User		
Comments and Work notes	comments_and_work_notes	Journal List			
Company	company	Reference	Company		
Configuration item	cmdb_ci	Reference	Configuration Item		
Contact type	contact_type	String 6 Choices		40	
Contract	contract	Reference	Contract		

+ Add new field

Showing 1-20 of 67

Policies and rules | Preview | Save

Approval Inherited  
approval  
String

Changes you make are specific to the IP Registration table

Field details

Label Approval

Read only  Mandatory

Active

Max. length 40

Default value

Dependent field

Choices (4)

Use choices

Not Yet Requested  
Requested  
Approved  
Rejected

Edit (4)

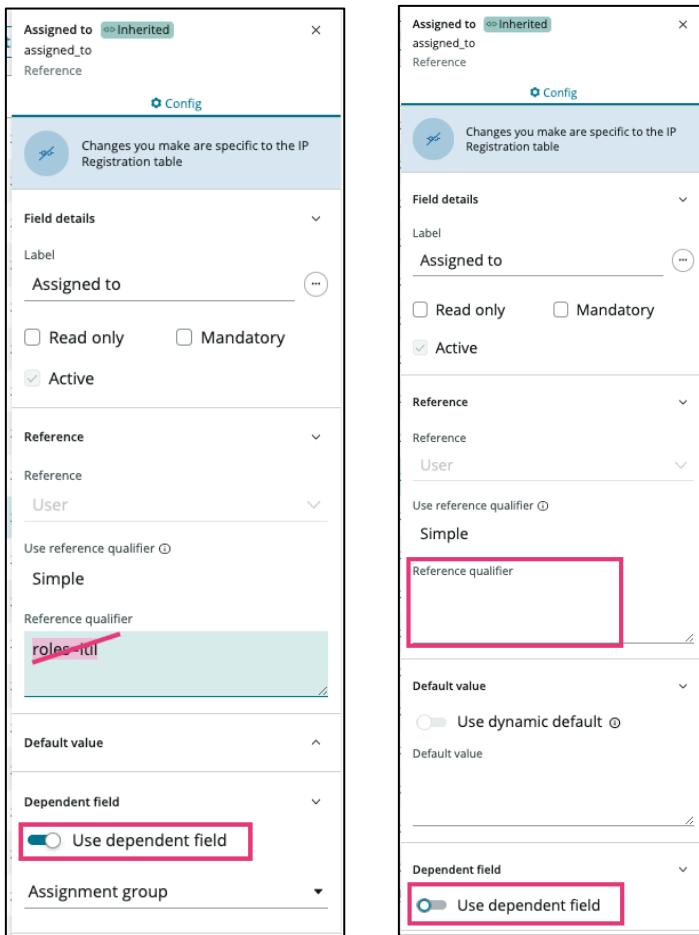
Attributes (1)

Formula

- We need to remove the pre-condition for the Assigned to field. Select Assigned to field, and click the settings icon to show the **Assigned to** field configurations panel on the right side.

Assigned to	assigned_to	Reference
-------------	-------------	-----------

From the **configurations panel** remove the **Reference qualifier roles=itil**, and switch off **Use dependent field**. This will remove Assignee restrictions. Click **Save**.



- We will start adding new data fields that are non-extended fields, for the ease of seeing the new fields to be added, click **Filter options** drop-down list, select **Hide extended fields**. Note that all the extended table fields will be hidden.

Column label *	Column name *	Type *	Reference	Max length	Default value
Active	active	True/False			true

- Click **+ Add new field**.

The screenshot shows the ServiceNow App Engine Studio interface for the 'IT Procurement Request' application. The top navigation bar includes links for HOME, MY APPS, TEMPLATES, and RESOURCES. The current page is 'Data Table And Forms' under 'IT Procurement Req...'. The main content area displays the 'Table fields' configuration for the 'IT Procurement Request' table. A red box highlights the '+ Add new field' button. The table fields section shows columns for 'Column label', 'Column name', 'Type', 'Reference', 'Max length', 'Default value', 'Display', and 'Updated'. Below the table, a message says 'No data available' with a small icon. At the bottom, there are buttons for '+ Add new field', 'Records per page 20', and 'Done'.

Let's IP Category data field which will be used to identify the type of IP Registration. Enter **Column label** as **IP Category** with **Choice Type** of **Dropdown with - None -**. Add the three choices with Labels: **Patent**, **Trademark** and **Design**. Note that the value of the choices will be automatically entered, we will leave the values as default. Click **Done**.

The screenshot shows the ServiceNow App Engine Studio interface for the 'IP Registration' application. The top navigation bar includes links for 'App Home' and 'IP Registration Manage...'. The current page is 'Data Table And Forms' under 'IP Registration'. The main content area displays the 'Table fields' configuration for the 'IP Registration' table. A red box highlights the 'IP Category' column label. Another red box highlights the 'Choice' dropdown in the 'Type' column. The table fields section shows columns for 'Column label', 'Column name', 'Type', 'Reference', 'Max length', and 'Default'. On the right, there is a 'Choices' section where three items are listed: 'Label \* Patent' with 'Value \* patent', 'Label \* Trademark' with 'Value \* trademark', and 'Label \* Design' with 'Value \* design'. A red box highlights the 'Add' button in this section. At the bottom, there is a 'Done' button.

**IP Registration**

Table fields + Add new field

Column label *	Column name *	Type *	Reference	Max length
IP Category	ip_category	Choice 3 Choices		

- Add a Work Stage data field which will be used to track the working stage of the IP Registration request. Click **+ Add new field**. Enter **Column label** as **Work Stage** with **Choice Type** of **Dropdown with - None -**. Add the 5 choices with Labels:

- 1 - Submitted IP Registration Request**
- 2 - Submitted IP Documents**
- 3 - Legal Reviewing Details**
- 4 - Requestor Clarification Required**
- 5 - Approved for IPD**

Note that the value of the choices will be automatically entered, we will leave the values as default. Click **Done**.

Table fields + Add new field

Column label *	Column name *	Type *	Reference	Max length	Default value
IP Category	ip_category	Choice 3 Choices			
● Work Stage	work_stage	Choice 3 Choices			

Showing 1-1 of 1

1 - Submitted IP Registration Request  
 2 - Submitted IP Documents  
 3 - Legal Reviewing Details  
 4 - Requestor Clarification Required  
 5 - Approved for IPD

Choice

Choice Type \* ⓘ  
Dropdown with -- None --

Choices ⓘ  
Type a choice and hit ENTER

Add

Label *	Value *
1 - Submitted IP Registrat	submitted_ip_registration
2 - Submitted IP Docume	submitted_ip_documents
3 - Legal Reviewing Detail	legal_reviewing_details

Label ↴ Value ↴

Done

Select the **Default value** as **1 - Submitted IP Registration Request**.

Table fields + Add new field

Column label *	Column name *	Type *	Reference	Max length	Default value
IP Category	ip_category	Choice 3 Choices			
Work Stage	work_stage	Choice 5 Choices			1 - Submitted IP Registration R...

9. Click **Save**.

10. Next, we will configure the default form for IP Registration. Click the **Form tab**.

The screenshot shows the ServiceNow 'Data Table And Forms' page for 'IP Registration'. The 'Forms' tab is highlighted with a red box and an arrow pointing to it from the top right. The table below lists the 'ip\_category' field with its type set to 'Choice' and '3 Choices'.

Column label *	Column name *	Type *	Reference	Max length	Default value
IP Category	ip_category	Choice 3 Choices			

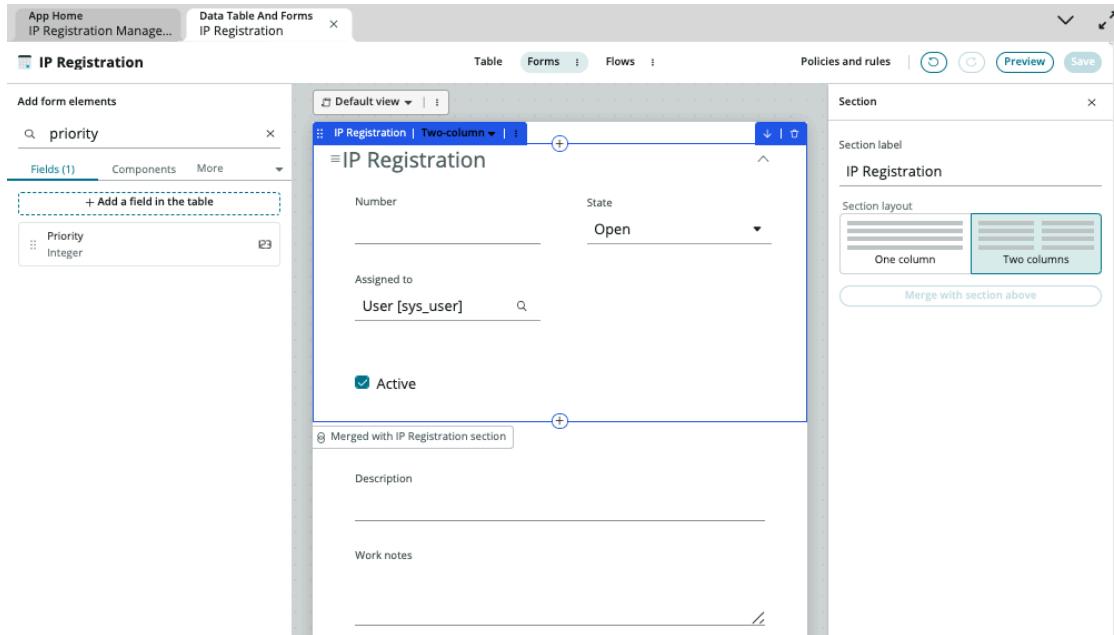
11. We will remove the default field that is not needed for the IT Procurement Request form:

- Priority
- Configuration Item
- Parent
- Short Description

To remove the field from the form, hover over the data field, click on the X to remove the field.

The screenshot shows the 'IP Registration' form builder. The 'Priority' field is selected and has a 'Delete Field' button highlighted with a red box and an arrow. The form also includes fields for 'Number', 'Assigned to', and 'State'.

After you have removed the fields, the form should look like this:

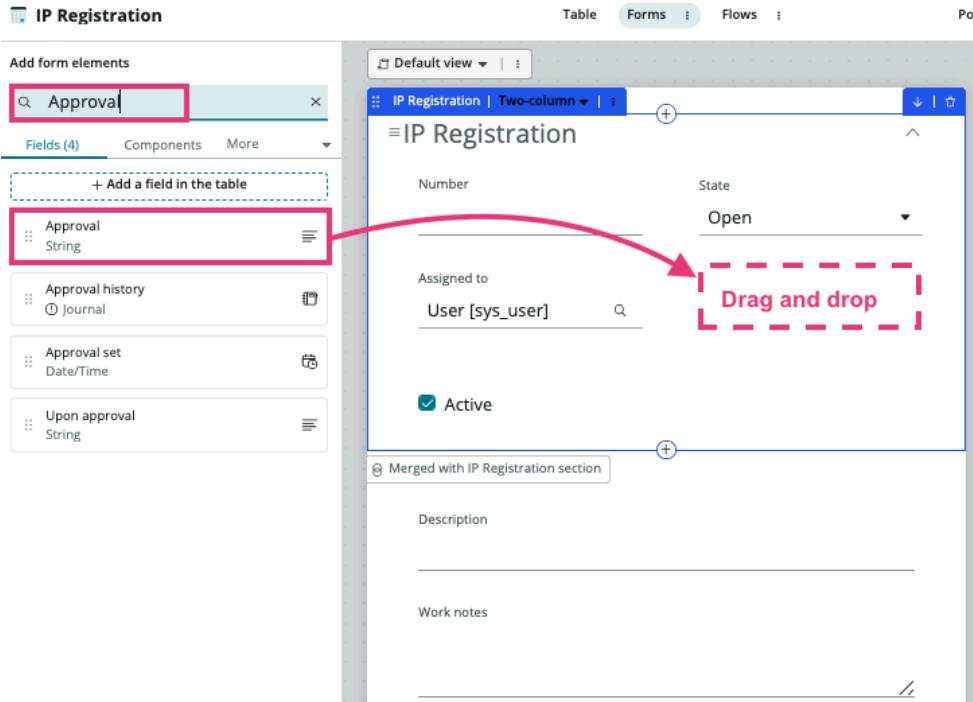


The screenshot shows the ServiceNow Data Table And Forms interface for creating an 'IP Registration' form. The left sidebar allows adding form elements like 'Priority' (an integer field). The main area displays the 'IP Registration' form with a 'Two-column' layout. Fields include 'Number' (text), 'State' (dropdown with 'Open' selected), 'Assigned to' (User [sys\_user] dropdown), 'Active' (checkbox checked), 'Description' (text area), and 'Work notes' (text area). A sidebar on the right shows the 'Section' configuration, including the section label 'IP Registration' and section layout options for 'One column' or 'Two columns'.

12. Add the data fields of interest to the IP Registration form:

- Approval
- Requestor
- IP Category
- Work Stage

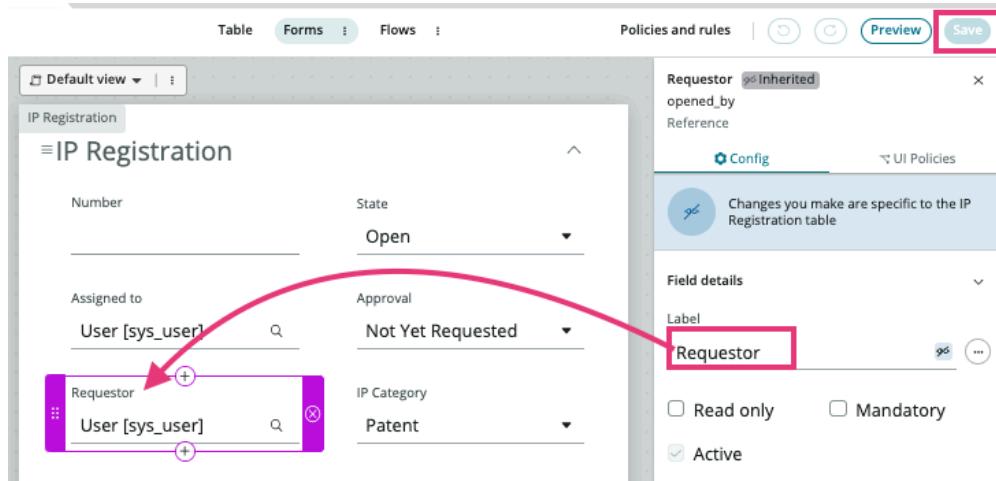
Use the **form element search bar**, search for **Approval**. Locate the Approval field from the **Add form elements** menu below, hover over the **Approval** field, **drag and drop** the Approval field to the desired location within the form. Repeat the same with other field of interest.



The result should look like the form below:

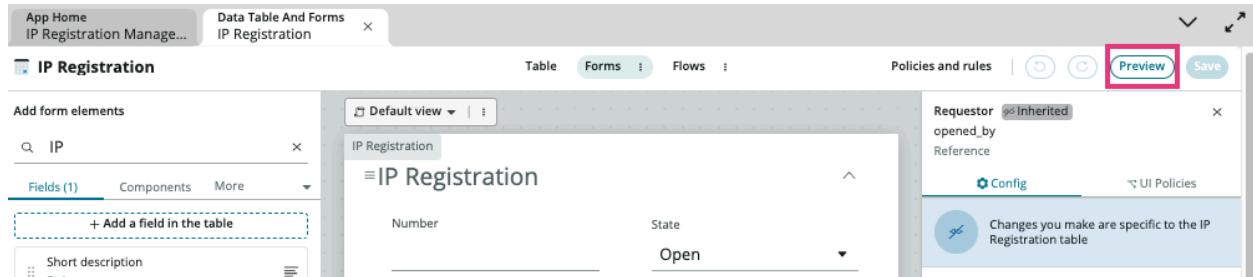
Number	State
Open	
Assigned to	IP Category
User [sys_user]	Patent
Opened By	Work Stage
User [sys_user]	1 - Submitted IP Registration Requ...
<input checked="" type="checkbox"/> Active	Approval
Not Yet Requested	

13. Note that we can change the data field label of the default fields. Select **Opened by** data field and change the **Label** from Opened by to **Requestor**.



14. Click **save**.

15. Click **Preview** to check out what the form looks like. This form format is used within Workspaces.



The screenshot shows the 'IP Registration' form in ServiceNow. It includes fields for Number (IPREG0001003), State (Open), Assigned to, Requestor (System Administrator), IP Category (None), Work Stage (1 - Submitted IP Registration Request), Approval (Not Yet Requested), Description, and Work notes.

After you have explored the form, **Close** the preview tab. **Close** the **AES Data table and forms** tab for the IP Registration.

## Update Existing Table

1. Go back to the **App Home** tab and click to open the **Document Approval** table. If the **Welcome to Table builder** modal pops up, click **X** to dismiss it.

The screenshot shows the 'Data Table And Forms' tab in ServiceNow. It displays the 'IP Registration Management' table. A red box highlights the 'App Home' tab. A red dashed box highlights the 'Click here' button next to the 'Document Approval' table entry.

2. Click **+ Add new field** to add a reference data field to the IP Registration table. Enter **IP Registration No** as the **column label**, Select **Reference** as the data **Type**, and Reference the **IP Registration** table. Click **Save**.

The purpose of this data field is to relate the document to the IP Registration Request.

**Document Approval**

Table fields [+ Add new field](#) 1

Column label *	Column name *	Type *	Reference
Active	active	True/False	
Category	approval_category	Reference	Document Approval
Created	sys_created_on	Date/Time	
Created by	sys_created_by	String	
Description	description	String	
Name	name	String	
Number	number	String	
Status	status	String	4 Choices
Submitter	submitter	Reference	User
Updated	sys_updated_on	Date/Time	
Updated by	sys_updated_by	String	
Updates	sys_mod_count	Integer	
Work Notes	work_notes	Journal	
IP Registration No	ip_registration_no	Reference	IP Registration

Showing 1-13 of 13

3. Click the **Forms** tab. Drag and drop **IP Registration No** to the Document Approval form. Click **Save**.

**Document Approval**

Table Forms Flows Policies and rules | [Preview](#) [Save](#)

Add form elements

Fields (8) Components (2) More

+ Add a field in the table

Category Reference: Document Approval Category

Created Date/Time

Created by String

IP Registration No Reference: IP Registration

Submitter Reference: User

Default view Document Approval

Document Approval

Number \* Active

Category \* Document Approval Category [x\_]

Status Submitted

Name \* Submitter \*

User [sys\_user]

IP Registration No IP Registration [x\_snc\_ip\_register]

Merged with Document Approval section Description \*

Config UI Policies

Field details

Label IP Registration No

Read only Mandatory

Active

Reference

Default value

Dependent field

Attributes (1)

4. Close the AES Data Table and Forms tab for Document Approval.

5. Return to the AES **App Home** tab, **Preview** the Document Approval Category table as we will add more document categories for the purpose of our application.

Table	Description	Last edited	Actions
IP Registration	Table is a way to store your d...	2023-06-12 14:56:44	<a href="#">PREVIEW</a> <a href="#">...</a>
Document Approval	Table is a way to store your d...	2023-06-11 08:06:58	<a href="#">PREVIEW</a> <a href="#">...</a>
Document Approval Category	Table is a way to store your d...	2023-06-11 08:06:57	<a href="#">PREVIEW</a> <a href="#">...</a>
Document Approver	Table is a way to store your d...	2023-06-11 08:06:54	<a href="#">PREVIEW</a> <a href="#">...</a>

Add two more Document Approval Categories. Click **New**.

Number	Name	Active	Description	Use Flow
DOCC0001001	Invoice	true	Invoice	Single Stage Approval
DOCC0001002	Contract	true	Contract	Single Stage Approval

Enter **Name** as **Intellectual Property Documentation** and select **Use Flow** as **Single Stage Approval**. Click **Submit**.

Number	DOCC0001002	Active	<input checked="" type="checkbox"/>
* Name	Intellectual Property Documentation	* Use Flow	Single Stage Approval
Description			

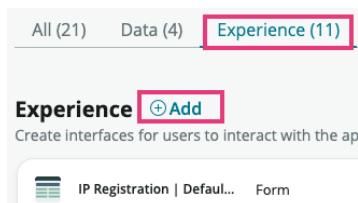
Add another new category with **Name** as **Supporting IP References** also with **Use Flow** as **Single Stage Approval**.

The screenshot shows the 'Document Approval Category' form in ServiceNow. The 'Number' field contains 'DOCC0001003'. The 'Active' checkbox is checked. The 'Name' field is set to 'Supporting IP References'. The 'Use Flow' dropdown is set to 'Single Stage Approval'. There is a large empty 'Description' field. At the bottom left is a 'Submit' button.

Close the Document Approval Categories browser tab.

## Build a nicer form Using Record Producer

1. Return to the **App Home** tab in AES. Click **Experience** tab and click **+Add** in the **Experience** section to add an experience.



6. Select **Record producer** from **What type of experience do you want to add to your app?** Click **Begin**.

The left screenshot shows the 'ADD EXPERIENCE' page with four options: 'Workspace', 'Standard catalog item', 'Record producer' (highlighted with a red box), and 'Mobile experience'. The right screenshot shows a detailed view of the 'Employee Records' record producer interface, including fields for 'Requested for' (set to 'John Smith'), 'Criticality' (set to '1 - Very Critical'), and 'Category' (set to 'Password Reset'). A 'Begin' button is at the bottom right.

7. Enter **Name** as **IP Registration** and enter **Short description** as **Submit a request for your IP Registration (Patent, Trademark or Design)**. Click **Continue**.

1 Basic info      2 Summary

**ADD EXPERIENCE**

**Let's set up your record producer.**

After you set this up, you can edit its contents.

Name \*  
IP Registration

Short description  
Submit a request for your IP Registration (Patent, Trademark or Design)

Cancel Continue

8. Click **Edit record producer**.

**ADD EXPERIENCE**

**Success! You added a record producer.**

You can edit this record producer or continue building the rest of your app.

Name: IP Registration      Short description: Submit a request for your IP Registration (Patent,...)

Edit record producer Done

9. **[Optional]** Click **Attach File** from **Item details**. Upload a relevant image file as the record producer image. Click **Continue to Destination** →

**Item details**

Image ①

Attach File

**IP Registration**

**Details** • **Destination** • **Location** **Questions** **Settings** **Access** **Review and Submit**

**Details**  
Provide basic information and details about your item

**Basic info**

Item name \* IP Registration

Short description Submit a request for your IP Registration (Patent)

**Item details**

Image IP-logo.jpeg

Description

Continue to Destination →

10. Select Destination Table as **IP Registration**. Click **Continue to Location →** at the bottom right.

**Destination**  
Specify the destination table for the records submitted using this form

**Table**

Record submission table \*

IP Registration

Showing 1-1 of 1  
IP Registration  
x\_snc\_ip\_registr\_2\_ip\_registration

11. Click **Browse** from **Catalogs**. Select **Service Catalog** as the **Catalogs** Location and select **Can We Help You?** As the **Categories**. Click **Continue to Questions →** at the bottom right.

## Location

Choose a catalog and category where requesters can find your item

### Catalogs

Selected catalogs [Edit selected catalogs](#)

Service Catalog [View](#)

### Categories

Selected categories [Edit selected categories](#)

Can We Help You? [View](#)

12. Click **Insert new question**.

## Questions

Define the questions on your item form

[Expand all](#)

[Insert new question](#) ▾

13. In the Question Editor, configure:

Question Type = Choice

Question Subtype = **Dropdown (fixed values)**

**Check** Map to a specific field on the table

Table field = **IP Category**

Question Label = **Which Intellectual Property (IP) category  
are you registering?**

**Check** Mandatory

### Which Intellectual Property (IP) category are you registering?

Select a question type and fill in the details

Question	Choices	Default value	Annotation
<b>Type</b> How do you want the user to answer your question (e.g. text, selections, dates)?	Question type Choice		
Question subtype *	Dropdown (fixed values)		
<b>Details</b> What would you like to ask or inform the user of?			
<input checked="" type="checkbox"/> Map to a specific field on the table Table field IP Category			
Question label * Which intellectual Property (IP) category are you re			
Name * ⓘ ip_category			
<input checked="" type="checkbox"/> Mandatory			
<a href="#">Continue to Choices →</a>			

Click **Continue to Choices →**. Check **Include none choice**. Click the + to add new choices.

Question	Choices	Default value	Annotation
<b>Settings</b> These settings will structure how your question is displayed	<input checked="" type="checkbox"/> Include none choice		
<b>Available Choices</b> To make your multiple choice valid, add at least two choices.			
Display name	Value		

Add 3 choices with the **Patent, Trademark, Design** as the **Display name**, keep the Choice Values as default. Note that on the right panel, you can preview the question. Click **Insert Question**.

### Which Intellectual Property (IP) category are you registering?

Select a question type and fill in the details

- Question    [Choices](#)    [Default value](#)    [Annotation](#)

**Settings**  
These settings will structure how your question is displayed

Include none choice

---

**Available Choices**  
To make your multiple choice valid, add at least two choices.

Display name	Value
Patent	patent
Trademark	trademark
Design	design
(+) Add choice	

[Continue to Default value →](#)

**Question Preview**

Which Intellectual Property (IP) category ar... \*

-- None --

[Insert Question](#)

14. Click **+** after the previous question to insert a second question. Click on the **New question** icon.

**IP Registration**

Detail      
Destri      
Location  
**Questions**  
Settings  
Access  
Review and

**Questions**  
Define the questions on your item form

[Insert new question](#)

Which Intellectual Property (IP) category are you... \* Choice - Dropdown (fixed...)

(+)

**Insert component**

**Questions**

- New question
- Question set
- Deactivated questions

**Structure**

- Single column container
- Two column container
- Line break

**+ Insert**

15. In the Question Editor, configure:

Question Type = **Text**  
 Question Subtype = **Multi-line**  
**Check** Map to a specific field on the table  
 Table field = **Description**  
 Question Label = **Please provide details of your Intellectual Property for registration.**

**Check Mandatory**

Click **Insert Question** at the bottom right.

Please provide details of your Intellectual Property for registration. X

Select a question type and fill in the details

<input checked="" type="radio"/> Question	Default value	Annotation
<b>Type</b> How do you want the user to answer your question (e.g. text, selections, dates)?  Question type Text <span style="float: right;">▼</span>  Question subtype * Multi-line <span style="float: right;">▼</span>		
<b>Details</b> What would you like to ask or inform the user of?  <input checked="" type="checkbox"/> Map to a specific field on the table  Table field Description <span style="float: right;">▼</span>  Question label * Please provide details of your Intellectu...		
Name * ⓘ description <span style="float: right;">▼</span>  <input checked="" type="checkbox"/> Mandatory		
<a href="#" style="color: #0070C0; text-decoration: none;">Continue to Default value →</a>		

**Question Preview**

Please provide details of your Intellectu...

Insert Question

16. Click **Continue to Settings →**

17. Check **Hide 'Add to wishlist' button** and check **Make attachment mandatory**. Click **Contine to Access →**.

## Settings

Adjust the portal settings and submit button label for your item

### Portal settings

Hide 'Add to wishlist' button

Hide attachment button

Make attachment mandatory

18. Add **Any User** to the **Available for** Access configuration. Click **Continue to Review and Submit** →.

Details •

Destination •

Location

Questions

Settings

Access

Review and Submit

### Access

Select which users or groups can access your catalog item

**Available for**

User criteria granted access ↗  
Edit user criteria granted access  
Any User ↗

**Not available for**

User criteria denied access  
Browse

19. Review the IP Registration record producer. Click Preview to review the look and feel of the record producer.

App Home IP Registration Manager... Record Producer IP Registration

IP Registration

Preview Save

## Preview your catalog item

Here's a representation of your item in different experiences. You can interact with the item but not submit it.

View within  Portal  Now Mobile  Virtual Agent  Open preview in a new tab

### IP Registration

Submit a request for your IP Registration (Patent, Trademark or Design)



\* Indicates required

\* Which Intellectual Property (IP) category are you registering?  
-- None --

\* Please provide details of your Intellectual Property for registration.

Submit

Required information

Which Intellectual Property (IP) category are you registering?

Please provide details of your Intellectual Property for registration.

Click **X** to close the Preview.

From the browser URL, note the **Sys ID** of the record producer which is the trailing 32 chars of the URL. In the example screen below, the Sys ID is **58b7e2eadf5321503aa3de6bdcb83ff3**. Save the SysID value to a notepad, we will need the Sys ID to configure portal UX components to reference the IP Registration record producer at later stage of our build exercise.



Click **Continue to Review and Submit**. Review the details, click **Submit** to publish the record producer. Close the **Record Producer** tab.

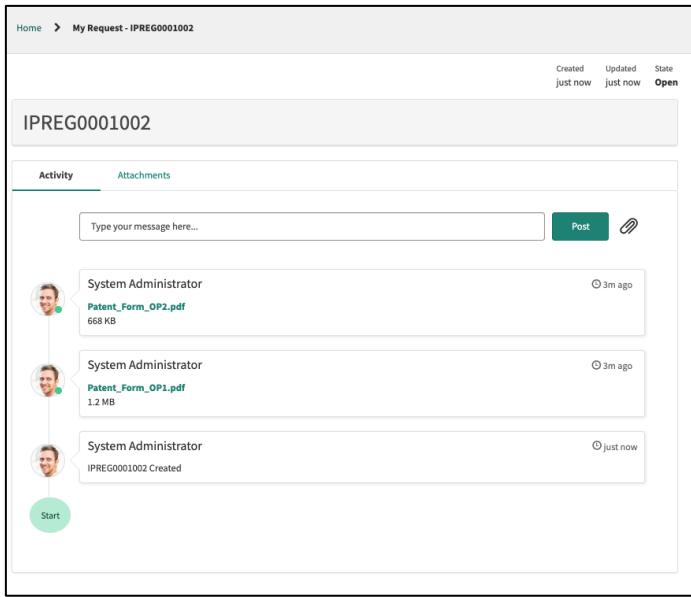
20. Let's test the record producer. Visit the platform Service Portal by opening a new browser tab, visit the URL [https://\[YourInstanceID\].service-now.com/sp](https://[YourInstanceID].service-now.com/sp), note the trailing "/sp" from the base URL which is the default service portal location. From the search bar, search for **IP Registration**. Select the first returned result, which is the record producer (form) that we have just created.

The screenshot shows the ServiceNow Employee Center homepage. At the top, there is a red banner with the text "Employee Center is available to you" and "Join your peer organizations in creating a better employee experience with Employee Center, ServiceNow's new employee portal." To the right of the banner is a link "Learn More about Employee Center". Below the banner, the ServiceNow logo is displayed, along with navigation links for Knowledge, Catalog, Requests, System Status, Cart, Tours, and System Admin. A user profile icon is also present. The main content area shows a search bar with the query "IP Registration" and a search icon. On the left, there is a sidebar with "Sources" and options for All, Knowledge Bases, and Catalogs. The main search results page displays the query "All results for \"IP Registration\"". A yellow callout box highlights the "IP Registration" link, with the sub-instruction "Submit a request for your IP Registration (Patent, Trademark or Design)".

Fill in the form by selecting **IP category** as **Patent**, and **details** as **Testing**. Add two attachment to the form (attach any two PDF, doc, xls, etc type files from your local directory). Click **Add attachments** and select one of your files in your local directory. Repeat the same for the second attachment. Click **Submit**. This submits the first IP Registration requests. **Close** the browser tab.

The screenshot shows the "IP Registration" form within the ServiceNow catalog. The form has a large red stamp reading "PATENTED" in the center. It includes fields for "Which Intellectual Property (IP) category are you registering?" (set to "Patent") and "Please provide details of your Intellectual Property for registration." (set to "Testing"). Below these fields is a section for attachments, showing two PDF files: "Patent\_Form\_OP2.pdf" (668 KB, 1m ago) and "Patent\_Form\_OP1.pdf" (1.2 MB, 1m ago). A button "Submit" is located on the right side of the form.

The follow shows that the IP registration request is submitted with a status summary.



## Exercise 3: Build the Digital Workflow

### Build the IP Registration Flow

1. Return to AES App Home tab. Select the **Logic and automation** tab, click **+Add** from **Logic and automation** section to add a new digital workflow.

All (22) Data (4) Experience (12) Logic and automation (3) +Add

**Logic and automation** +Add  
Add automated workflows to improve productivity

Document Approval - Mas...	Flow - record	It is the master flow for th...	Last
Document Approval Noti...	Email		Last
Single Stage Approval	Flow	This is a demo flow for doc...	Last

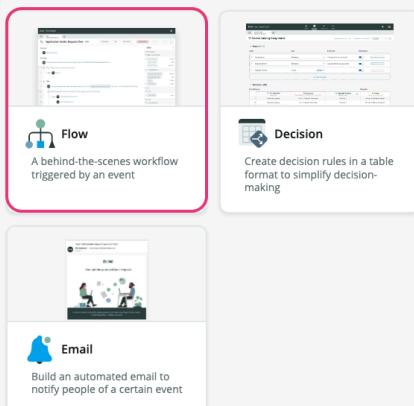
Select **Flow** from **What do you want to add?**

Select **Build from scratch** from **How do you want to add an automated workflow to your app?**

#### ADD LOGIC AND AUTOMATION

##### What do you want to add?

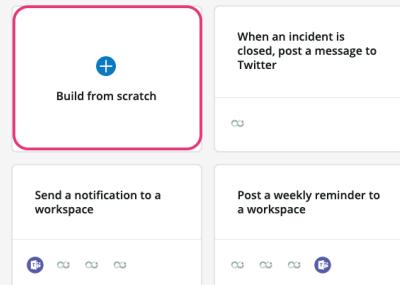
Automate your organization's workflows, like automated email notifications or an event-triggered flow, to improve productivity. Select one to learn more.



#### ADD AUTOMATION

##### How do you want to add an automated workflow to your app?

Select and customize one of these templates to automate your workflows. Or, build a new automated workflow from scratch. [Learn more about automated workflows.](#)



From **Let's set up your flow**, enter **Name** as **IP Registration Flow**, **Description** as **Automat IP registration steps**.

Click **Show advanced options**. Select **Run as System User**. Click **Continue**.

#### ADD AUTOMATION

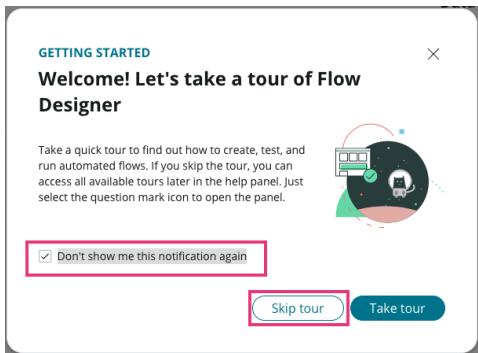
##### Let's set up your flow

This flow needs a name, description, and other details.

Name *	<input type="text" value="IP Registration Flow"/>
Description	<input type="text" value="Automat IP registration steps"/>
Show advanced options ▾	
Application	<input type="text" value="x_snc_ip_registr_2"/>
Protection	<input type="text" value="-- None --"/>
Run as	<input type="text" value="System User"/>
<input type="button" value="Cancel"/> <input style="background-color: #0070C0; color: white; border-radius: 10px; padding: 5px 10px; border: none; font-weight: bold; margin-left: 10px;" type="button" value="Continue"/>	

Click **Edit this flow in Success! Your flow is ready**. This will launch the flow designer with the **IP Registration Flow**.

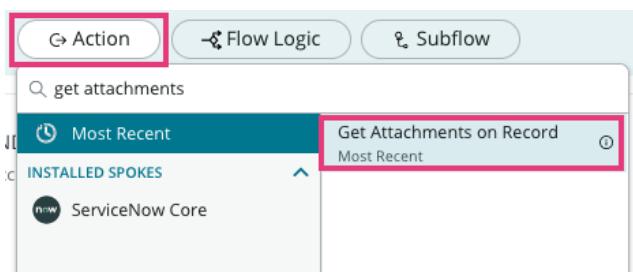
2. If the **Welcome! Let's take a tour of Flow Design** pops up, Check **Don't show me this notification again**, and click **Skip tour** button.



3. In the **Trigger** section, click **+ Add a trigger**. Search for **RECORD Created** as the Trigger agent, select **IP Registration** as the Table. Click **Done**.

The top screenshot shows the 'Abort trigger creation' dialog. The 'Trigger' dropdown is set to 'Select a Trigger'. A search bar contains the text 'created'. Below the search bar, a list shows 'RECORD' and 'Created' (highlighted with a red box). To the right, a description for 'Created' says: 'Trigger initiates from a ServiceNow record. The condition filter.' The bottom screenshot shows the 'TRIGGER' section of the configuration. A new trigger named 'IP Registration Created' is listed. Its details show 'Trigger' set to 'Created', 'Table' set to 'IP Registration [x\_snc\_ip\_registr\_2\_ip\_registr...]', and 'Condition' set to '+ Add filters'. At the bottom are 'Delete', 'Cancel', and 'Done' buttons.

4. From the ACTIONS section, click **+ Add an Action, Flow Logic, or Subflow**. Select **Action**. Search and select the **ServiceNow Core Get Attachments on Record** action.



Drag and drop the **Trigger Record** as the **Source Record**.

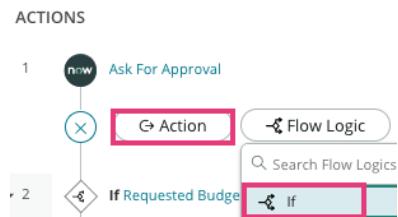
Note that on the right panel Data column, the output data pills of the Action step, which includes the count of attachments to the record, and the actual attachment records.

Click **Done**.

The screenshot shows the ServiceNow IP Registration Flow builder. In the ACTIONS section, there is one step: "1 Get Attachments on Record". The "Action" dropdown is set to "Get Attachments on Record". The "File Name" field is empty. The "Source Record" field contains the value "Trigger - ... > IP Registration R...". In the "Data" column on the right, under the "Trigger - Record Created" section, there is a list of data pills: "IP Registration Record" (Record), "IP Registration Table" (Table), "Run Start Time UTC" (Date/Time), "Run Start Date/Time" (Date/Time). Under the "1 - Get Attachments on Record" section, there are three data pills: "Attachment Records" (Records), "Count" (Integer), and "Action Status" (Object). A pink arrow points from the "Source Record" data pill to the "Count" data pill. Another pink arrow points from the "Done" button at the bottom of the action step to the "Output of the action step" label.

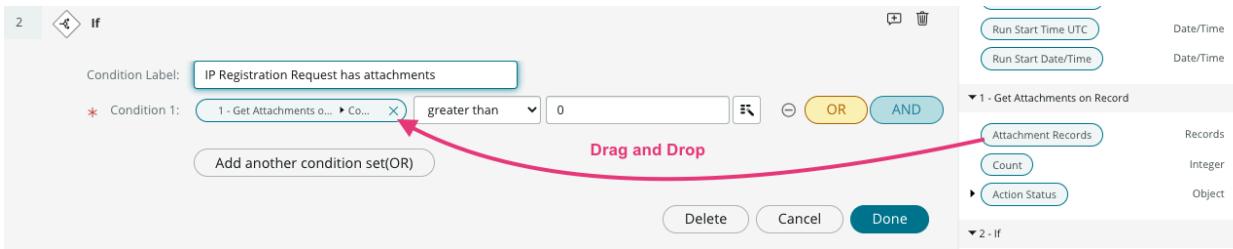
- Dependent on attachment count, if IP Registration attachment has record, then create the Document Approval record for each attachment such that we can leverage the existing approval flow originated from the App Template for the respective documents.

Click **+ Add an Action, Flow Logic, or Subflow**. Select **Flow Logic**. Use the **If** logic.

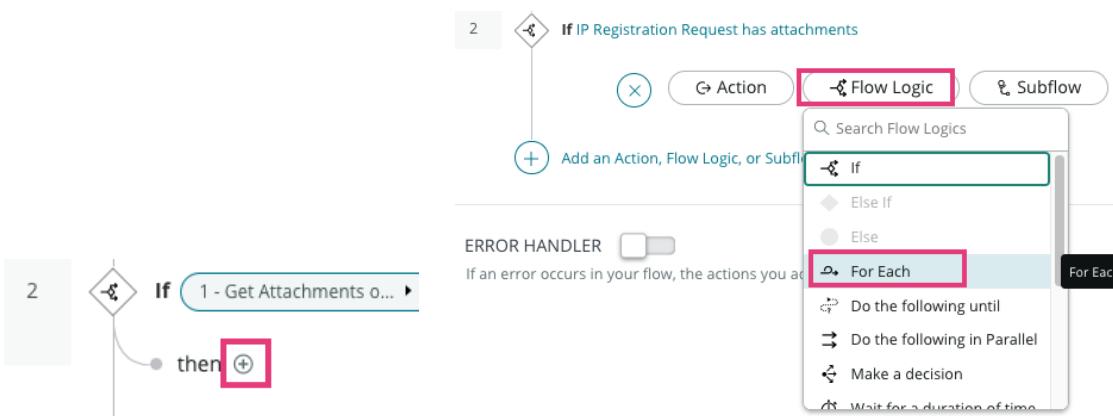


Enter Condition Label as **IP Registration Request has attachments**.

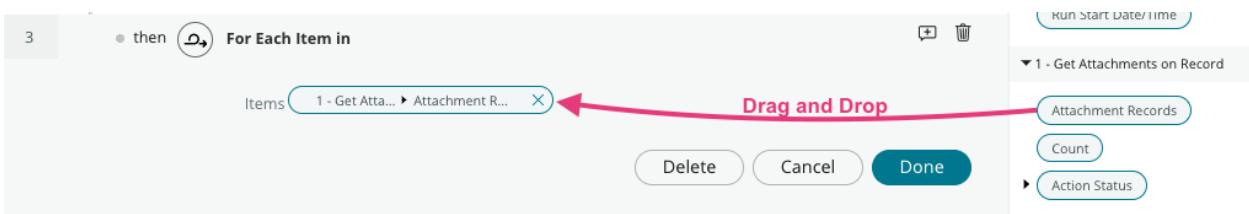
From the data pill picker right panel, Drag and drop the **Count output from step 1 – Get Attachments on Record** to the If Condition. Select **greater than**, enter **0**. Click **Done**.



6. Within the **If** logic, Click **then +** and click **Flow Logic**. Use the **For Each** logic.



From the data pill picker right panel, Drag and drop the **Attachment Records output from step 1 – Get Attachments on Record** to the **For Each Items** Condition. Click **Done**.



7. Click **Save** regularly to ensure that your flow is saved during the flow design process.
8. Add an action within the **For Each Item** condition, to the flow, click **+ Add an Action, Flow Logic, or Subflow**. Select **Action**. Search and select the **ServiceNow Core Create Record** action. Select **Table** as **Document Approval**.

Add data fields:

- **IP Registration No** as **Trigger Record's Sys ID** (drag and drop)
- **Description** as **Documentation attached to the IP Registration record**
- **Category** as **Intellectual Property Documentation**
- **Submitter** as **Trigger Record's Requestor** (drag and drop)

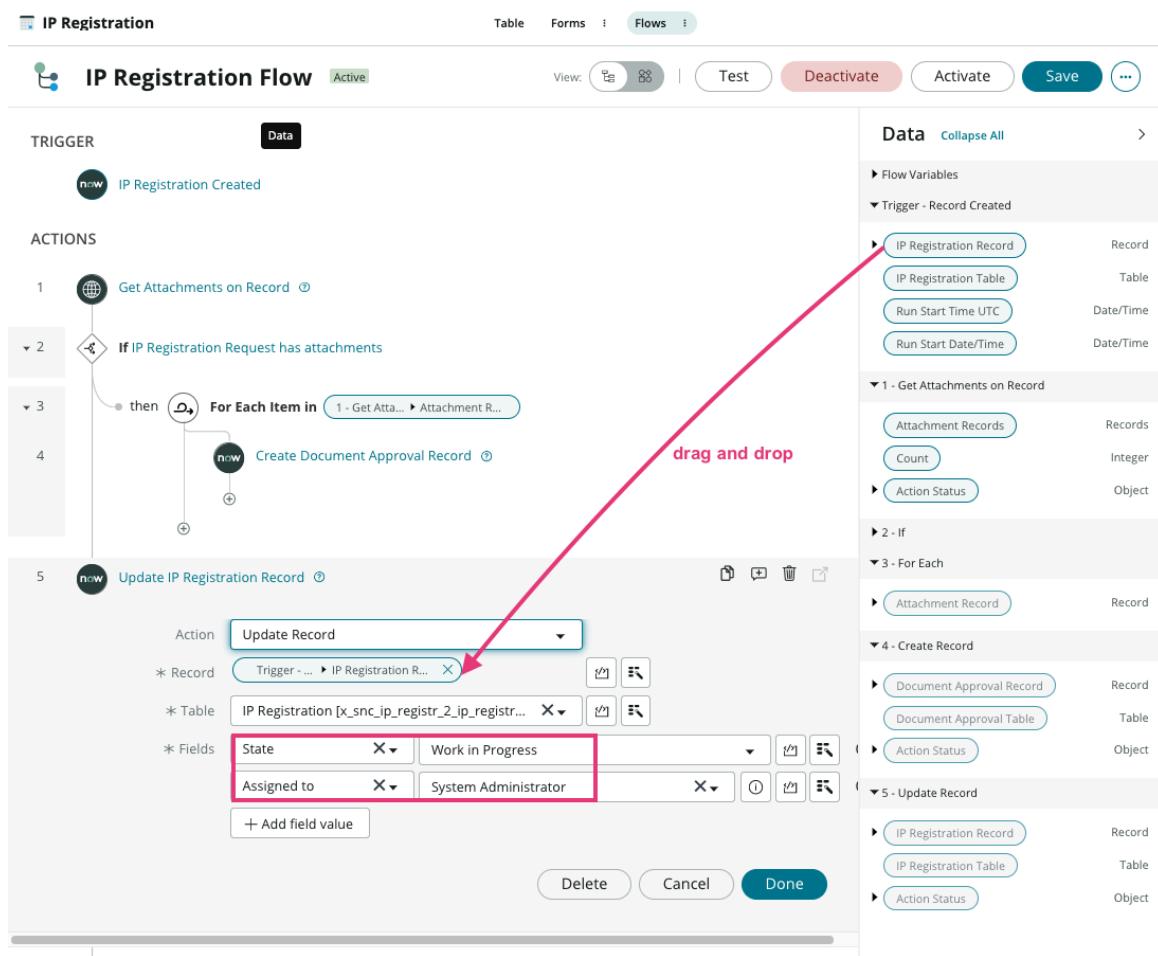
- Active checked (true)
- Name as IP Documentation [For Each Attachment's Filename] (drag and drop)

Click Done.

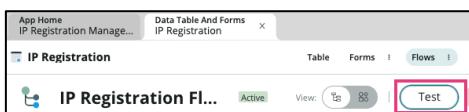
9. OUTSIDE of the For Loop and OUTSIDE the If Condition, add an action to the flow, click + Add an Action, Flow Logic, or Subflow. Select Action. Search and select the ServiceNow Core Update Record action.

Drag and drop the Trigger Record IP Registration Record to the Record Field. Add data fields State being Work in Progress, and Assigned to as System Administrator.

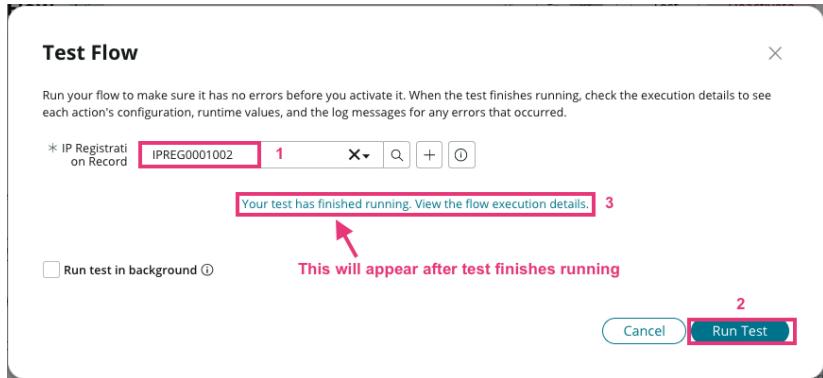
This is what the final flow would look like:



21. Click **Save**. Click **Activate**.
22. Let's test the workflow. Click the **Test** button. In the Test Flow pop up, select IP Registration on Record as the only record in the dropdown list. Click **Run Test** button.



After the flow test finishes running, click the link **Your test has finished running**.



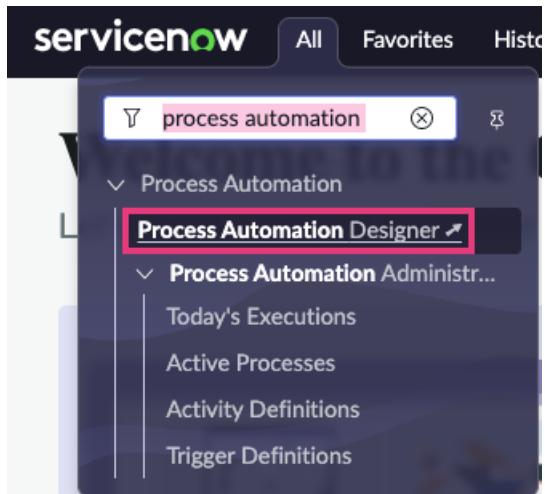
This will open the **Executions** tab in AES. It shows all the result of each step of the flow run. Review the step by step test results to get familiar with the flow Execution report.

Step	Description	Type	Status	Start Time	Duration
1	Get Attachments on Record	Configuration	Completed	2023-06-14 14:26:58	2ms
2	If Action Status is greater than 0	Flow Logic	Evaluated - True	2023-06-14 14:26:58	164ms
3	For Each Item in Attachment List	Flow Logic	Completed	2023-06-14 14:26:58	164ms
4	Create Record	Core Action	Completed	2023-06-14 14:26:58	62ms
5	Update Record	Core Action	Completed	2023-06-14 14:26:58	46ms

23. **Close** the Executions report tab. Click **Cancel** from the **Test Flow** pop up. **Close** the IP Registration Flow (Data Table And Forms) tab.

## Build a Prescriptive Guidance Playbook

1. Return to the Instance home page. Open a new browser tab, and visit your instance base url (i.e. <https://instanceID.lab.service-now.com>). From the All Navigation menu, search for **process automation**, click **Process Automation Designer** (PAD). This will launch PAD in a new browser tab.



2. Click **Create a new process**.

now. | Process Automation Designer

Multi-flow processes 0

Last refreshed just now.

<input type="checkbox"/> Label	Application	Status	Active	Updated by	Updated

**Create a new process**

3. Enter Label as **Intellectual Property Process**, enter Description as **Prescriptive Guidance on IP Registration preparation**. Click **Select a trigger** button.

Let's get the details for your process

Label \*

Intellectual Property Process

Description

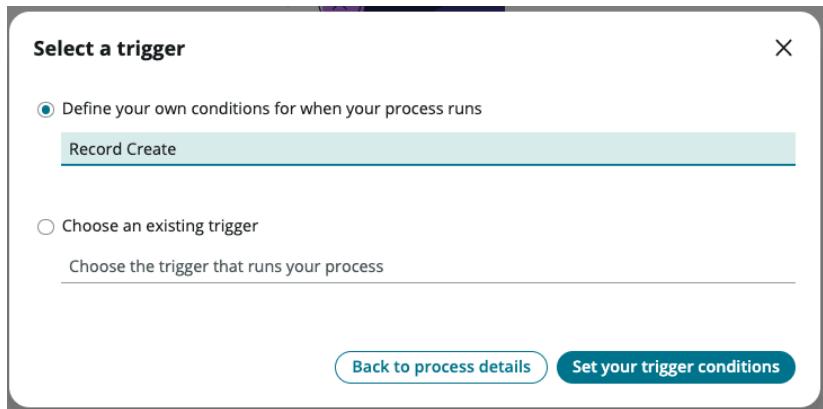
Prescriptive Guidance on IP Registration preparation

Application \*

IP Registration Management

**Select a trigger**

From **Select a trigger** modal, select **Define your own conditions for when your process runs** for **Record Create**. Click **Set your trigger conditions** button.



Select **Table** as **IP Registration**. Click **Go to Designer** button.

Finally, choose the conditions for when your process will run X

\* Table IP Registration

Condition All of these conditions must be met

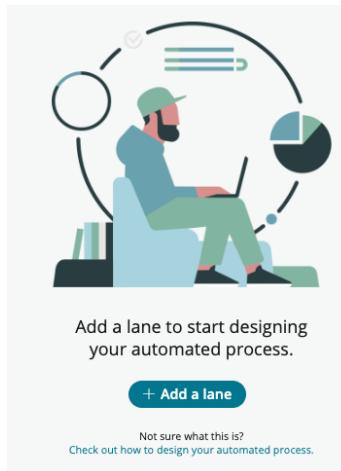
-- choose ... OR AND

New Criteria

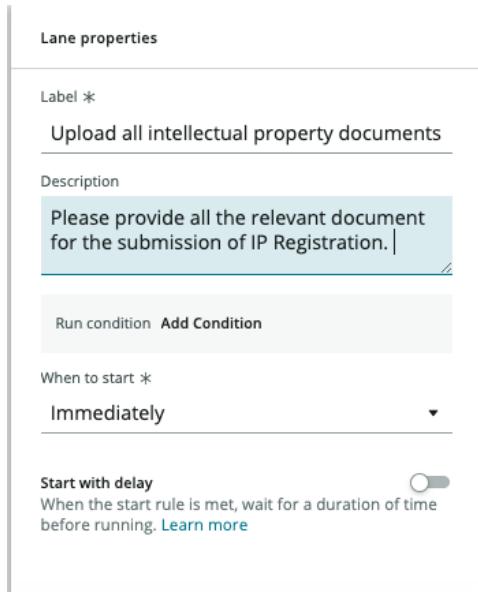
Run this trigger on

Back to trigger selection Go to Designer

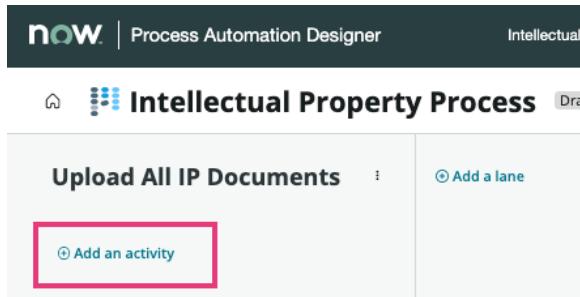
4. Click **+ Add a lane** button.



5. In the **Lane properties** right panel, enter Lane **Label** as **Upload All IP Documents**, **Description** as **Please provide all the relevant document for the submission of IP Registration**. Click **Save** and **Close** button located at bottom right.



6. Add a lane activity by clicking **+ Add an activity**.



Search for **instruction**, select **Advanced Instruction** from the **Common Activities**' Interactive section.

Add activity

instruc

[Create a new activity](#)

Common Activities	Default	Interactive
	<ul style="list-style-type: none"> <li><input checked="" type="radio"/> <a href="#">Instruction</a></li> <li><input type="radio"/> <a href="#">Advanced Instruction</a></li> <li><input type="radio"/> <a href="#">Two Step Instruction</a></li> </ul>	<p>Advanced <a href="#">Instruction</a> for use with Agent Workspace Playbook Experience, allowing for the process author to define all labels and messages show in the <a href="#">instruction</a> card.</p> <p><b>Inputs:</b></p> <ul style="list-style-type: none"> <li>• <b>Title</b> - Title that will be displayed in Playbook experience</li> <li>• <b>Description</b> - Description message that will be displayed in Playbook experience.</li> <li>• <b>Tag Line</b> - Header tag-line message for Playbook experience component.</li> <li>• <b>Footer</b> - Footer message for Playbook experience component.</li> <li>• <b>Wait for user input</b> - Pauses process execution until user manually completes the process activity</li> </ul> <p><b>Outputs:</b></p>

On the right **Activity properties** panel, enter **Label** as **IP Documents Upload**, **Description** as **Please ensure that all your relevant IP registration documents are uploaded. The fundamental mandatory documents include IPD form AAA and your IP specification document.**

Activity properties

General     Automation     Experience

**Label \***

**Description**

**Activity definition**

**Run condition** [Add Condition](#)

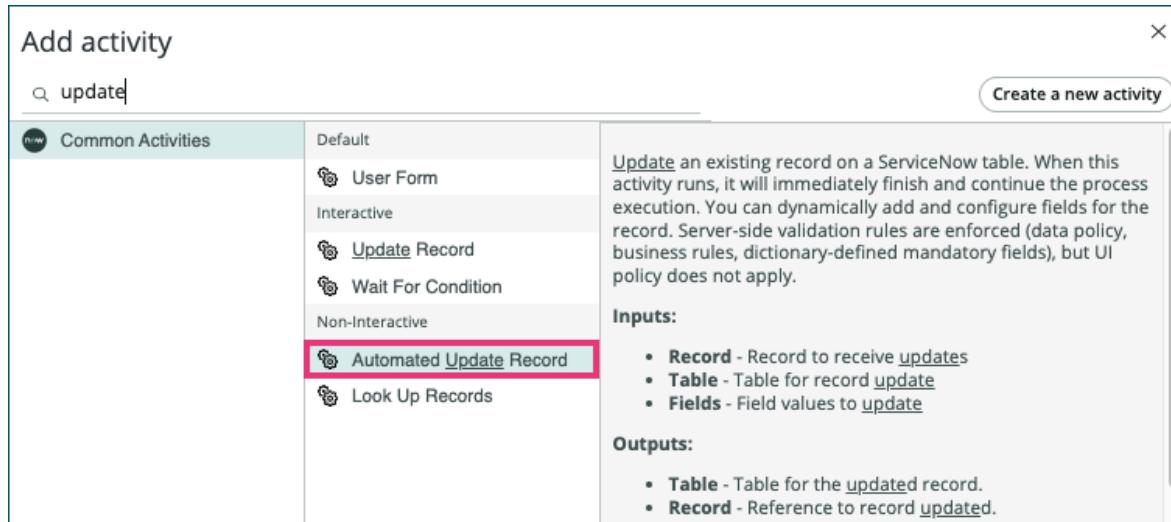
**When to start \***

**Start with delay**  When the start rule is met, wait for a duration of time before running. [Learn more](#)

[View all properties](#)

Click the **Save and close** button located at the bottom right.

7. Add a second activity in the same lane, click **+ Add an activity**. Search for **update record**, and select the **Automated Update Record**.



On the right **Activity properties** panel, enter **Label** as **Work Stage Update: Document Submitted**, **Description** as **After your confirmation, we have updated the request work stage to "2 - Submitted IP Documents.**

Select the **Automation** tab. Enter **Record** as **Trigger > IP Registration Record** (use the data pill selector), **Fields** as **Work Stage** with value as **2 – Submitted IP Documents**.

**Activity properties**

- General**
- Automation**
- Experience**

**Label \***

Work Stage Update: Document Submitted

**Description**

After your confirmation, we have updated the request work stage to "2 - Submitted IP Documents".

**Activity definition**

Update Record

**Run condition** [Add Condition](#)

**When to start \***

After Previous

**Start with delay** When the start rule is met, wait for a duration of time before running. [Learn more](#)

[View all properties](#)

**Activity properties**

- General**
- Automation**
- Experience**

**Automation**

Update Record Activity

**Inputs**

Wait for user input

No

Record \*

[Trigger ➔ IP Registration](#)

**Fields**

Work Stage

2 - Submitted IP Documents

**Add Field**

**Table \***

IP Registration

Click **Save and Close**.

8. Add a second lane by click **+ Add a line**. Enter lane **Label** as **Legal Review**, **Description** as **Legal will review all the information prior to IPD application**. Click **Save and Close**.

**Intellectual Property Process**

**Upload All IP Documents**

**IP Documents Upload**

Please ensure that all your relevant IP registr...

Immediately

**Work Stage Update: Docume... :**

After your confirmation, we have updated th...

After Previous

[Add an activity](#)

**Lane properties**

**Label \***

Legal Review

**Description**

Legal will review all the information prior to IPD application.

**Run condition** [Add Condition](#)

**When to start \***

After Previous

**Start with delay** When the start rule is met, wait for a duration of time before running. [Learn more](#)

9. Click **+ Add an activity** in the **Legal Review** lane. Search for **email**, and select **Automated Send Email** activity.

**Add activity**

Search: email

Common Activities	Interactive	
	<ul style="list-style-type: none"> <li>Send Email</li> </ul>	Send Email - automatically sends a standard ServiceNow outbound email.
	<ul style="list-style-type: none"> <li>Automated Send Email</li> </ul>	<b>Inputs:</b> <ul style="list-style-type: none"> <li>To - To recipient list</li> <li>Cc - Cc recipient list</li> <li>Bcc - Bcc blind copy recipient list</li> <li>Subject - Subject of email</li> <li>Body - Body of message</li> <li>Target Record - Record the email will be attached to</li> </ul> <b>Outputs:</b> <ul style="list-style-type: none"> <li>Email - Email Record</li> </ul>

On the right **Activity properties** panel, enter **Label** as **Notify Legal for Review**, **Description** as **Sending email to legal for reviewing all the IP registration requirements and documents**. In the **Automation** tab, enter **Subject** as **Legal Review**, **To** as **System Administrator**, and **Body** as **Please review the IP Application Request assigned to you**. Click **Save and Close**.

**General**   **Automation**   **Experience**

**Label \***  
Notify Legal for Review

**Description**  
Sending email to legal for reviewing all the IP registration requirements and documents.

**Automation**

**Send Email Activity**

**Inputs**

**To**: System Administrator

**Cc**

**Subject**: Legal Review

**Body**

Please review the IP Application Request assigned to you.

10. Click **Activate**. Below is the completed playbook process. We have created a prescriptive Guidance Playbook that provides step-by-step guide to the end user on what to expect in the IP application process. In real life, the guide will have more steps, but for the purpose of the lab, we want to illustrate how easy it is to configure the playbook. We will embed the playbook in the user experiences as part of next exercise.

The screenshot shows the ServiceNow Process Automation Designer interface. At the top, it says "now | Process Automation Designer" and "Intellectual Property Process". Below that, there's a toolbar with icons for Home, Intel, Properties, Test, and Activate (which is highlighted with a pink box). The main area displays a flowchart titled "Intellectual Property Process". It starts with "Upload All IP Documents" (with sub-steps: "IP Documents Upload" and "Work Stage Update: Document..."), followed by "Legal Review" (with sub-step: "Notify Legal for Review"). There are also buttons for "Add a lane" and "Add an activity".

11. Let's test the playbook. Click **Test** button. From the **Test your process** pop-up, select the only **IP Registration Record**, Click **Run Test** button. After the test finish running click the **Playbook preview**'s **View** button.

The screenshots show the "Test your process" dialog. On the left, it says "Test your process" and "Run your process to make sure it has no errors before you activate it. When the test finishes running, check the target record of your process to verify it is running correctly." It has an input field "x\_snc\_ip\_registr\_0\_ip.registration record \*" containing "IPREG0001002". At the bottom are "Cancel" and "Run Test" buttons. On the right, it says "Test your process" and "When the test finishes running, check the target record of your process to verify it is running correctly." It shows a target record "x\_snc\_ip\_registr\_0\_ip.registration record IPREG0001002". Below that are sections for "Process execution details" and "Playbook preview" (which has a "View" button highlighted with a pink box). At the bottom are "Last test: 2023-06-14 22:38:17", "Run another test", and "Done" buttons.

A new browser tab with Playbook Preview is opened. Review the playbook to get familiar with it. **Close** the Playbook Preview browser tab. From the Test your process pop-up click **Done**.

Playbook Preview

Intellectual Property Proce... ▾

Intellectual Property Pr... ▾ ^

Upload All IP Documents  
2 remaining 1

Legal Review  
1 remaining

**Upload All IP Documents**

In Progress

IP Documents Upload

Assigned to Me

Please ensure that all your relevant IP registration documents are uploaded. The fundamental mandatory documents include IPD form AAA and your IP specification document.

**Mark Complete** **Skip**

Pending Automated Task

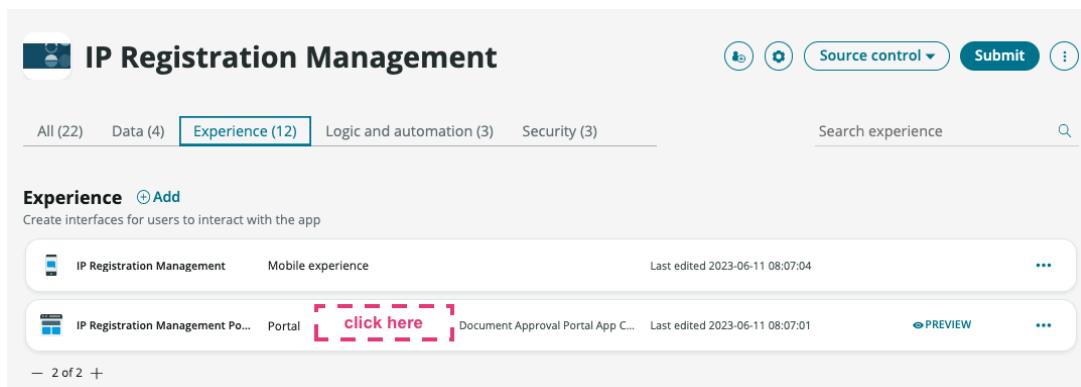
Update Record

Please wait while Playbook progresses.

## Exercise 4: Enhancing User Experience

### Update the IP Registration Portal

1. Return to the **App Home** tab in AES, and select **Experience**. Look for the **IP Registration Management Portal** and click the blank spaces it to launch the UI Builder.



The screenshot shows the ServiceNow Experience list page. At the top, there are tabs for All (22), Data (4), Experience (12), Logic and automation (3), and Security (3). The Experience tab is selected. Below the tabs, there is a search bar labeled "Search experience" and a magnifying glass icon. The main area displays two experience items:

- IP Registration Management**: Mobile experience. Last edited 2023-06-11 08:07:04. Three vertical dots icon.
- IP Registration Management Po...**: Portal. Document Approval Portal App C... Last edited 2023-06-11 08:07:01. A red dashed box surrounds the item name, and a red arrow points to the three vertical dots icon on the right.

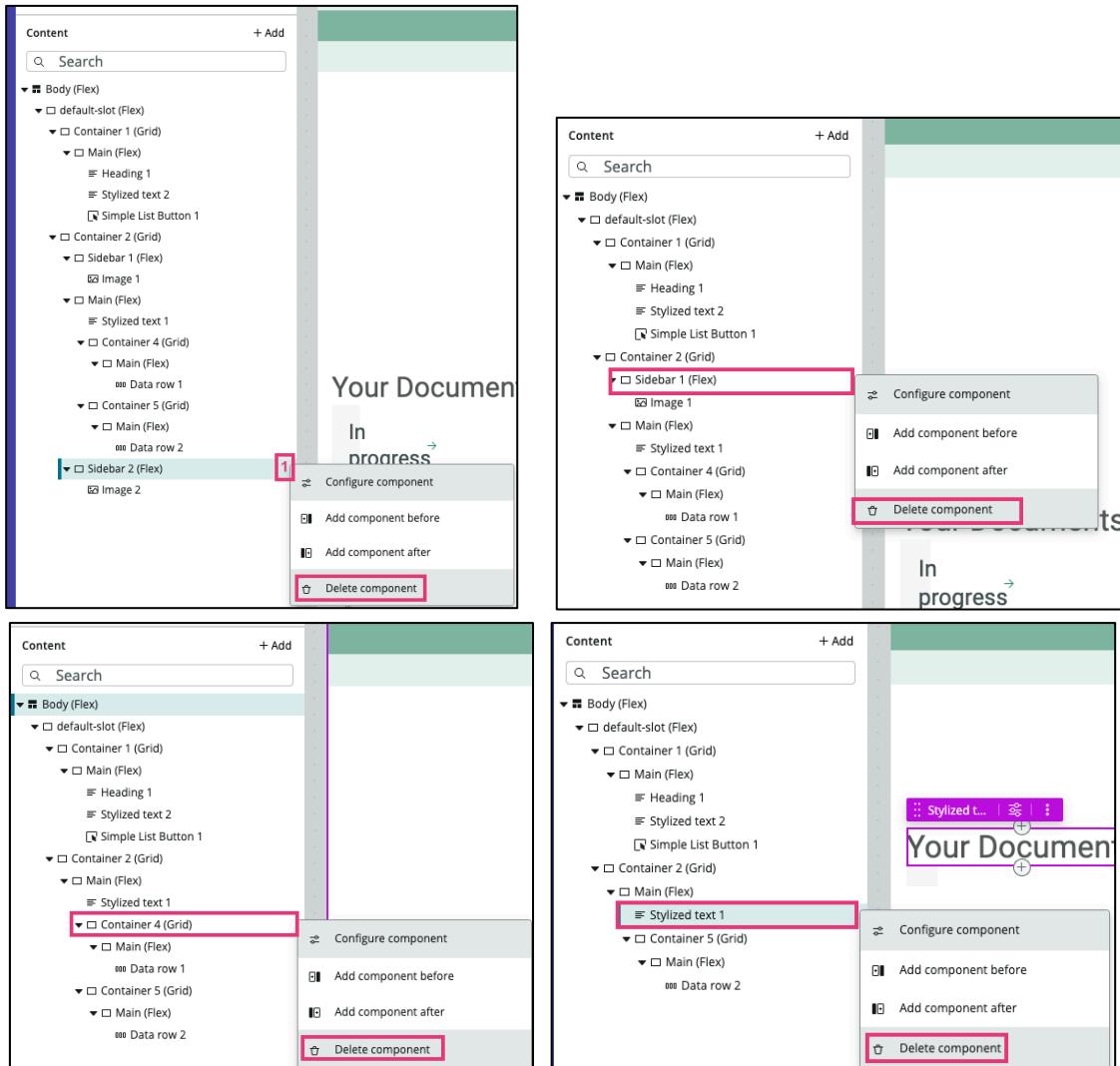
At the bottom left, there are navigation buttons: a minus sign, 2 of 2, and a plus sign.

2. We will now update the user experience (UX). We have another option to build from a experience template, in our case, we will assume we are collaborating as Citizen Developers, an so we will start with using the existing application portal.

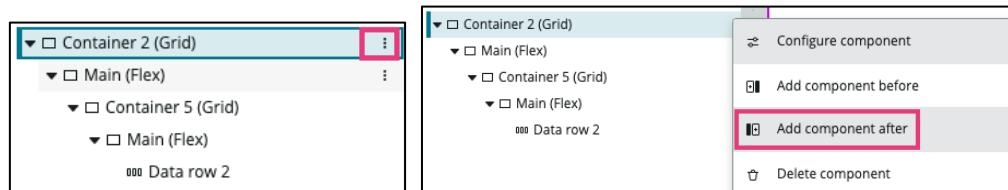
Let's start with deleting the components that we do not need from the portal. From the Content panel on the left we will locate the following items for deletion:

- Sidebar 2
- Sidebar 1
- Container 4
- Stylize text 1

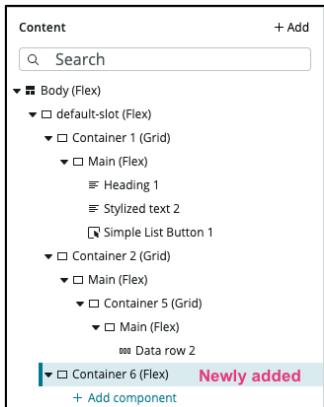
To delete the item, click the **item**, click the 3 vertical dots  on the right side of the item, click **Delete component**.



- We can start adding new content to the portal. Click **Container 2** from the Content panel on the left. Click the 3 vertical dots on the right side of **Container 2**. Click **Add component after**.



Search for **Container** from components pop-up search bar. Select **Container**. This will add a new content placeholder section to the portal.



In the component configurations on the right panel, click the ⓘ icon to edit the container label and ID, this makes it easier to read the components from on the content panel.

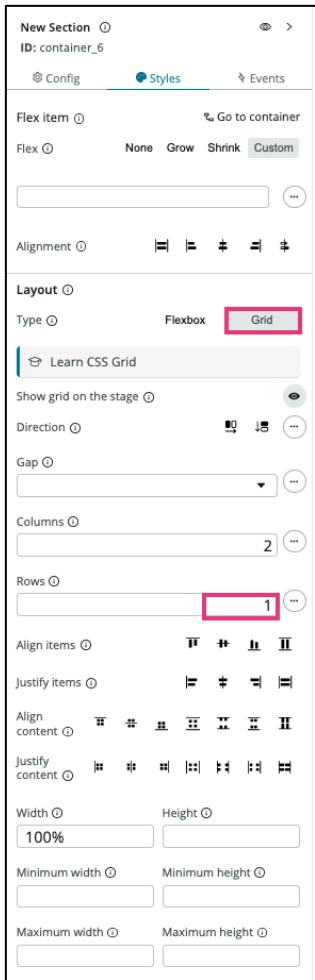
Replace the Component label from **Container 6** to **New Section**. Click **Apply**.

The screenshot shows the ServiceNow UI Builder interface. On the left, a modal window titled 'Container' displays configuration options for a 'Simple container component'. It includes fields for 'Component label \*' (set to 'New Section') and 'Component ID \*' (set to 'container\_6'). There are 'Reset component', 'Cancel', and 'Apply' buttons. The 'Apply' button is highlighted with a red box. On the right, the main UI Builder area shows a page titled 'doc\_landing'. The page content includes a heading 'We', a button 'Submit document submissions', and a section labeled 'All Docum'. A red arrow points from the 'New Section (Flex)' item in the component tree on the right towards the 'Apply' button in the modal.

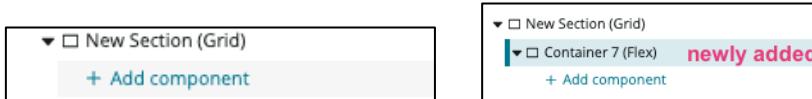
Click **Save** regularly to save our changes.

The screenshot shows the ServiceNow browser window. At the top, there's a header bar with tabs for 'App Home', 'IP Registration Man...', 'UI Builder', and 'IP Registration Management P...'. Below the header, the main content area shows a page titled 'doc\_landing'. In the top right corner of the browser window, there is a blue 'Save' button with a white border, which is highlighted with a red box.

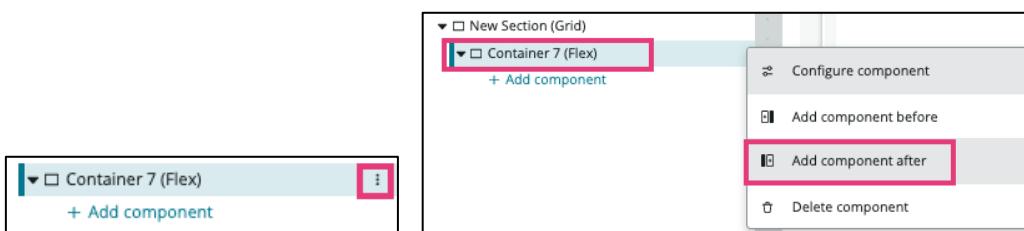
From the **New Section** component configuration panel on the right, look for **Layout** section, select **Grid**, enter **1** in **Rows**. That is, we want a container with 2 columns only.



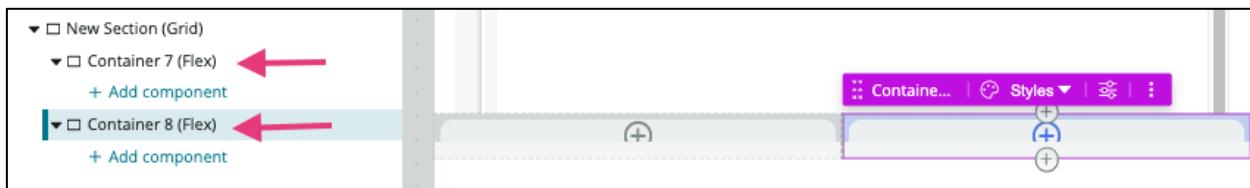
Click **+ Add component** within the New Section in the Content panel on the left. Select **Container** again. Yes, we are adding a container within the **New Section** container for formatting.



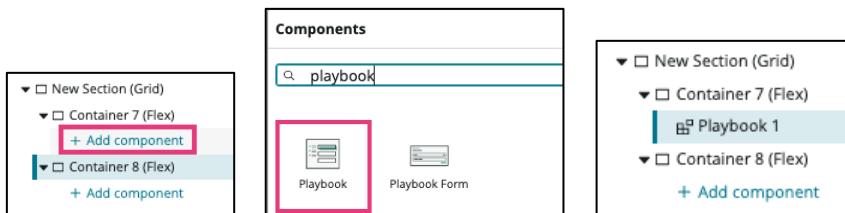
Select the newly added **Container 7**. Click the 3 vertical dots on the right side of **Container 2**. Click **Add component after**. Select **Container**.



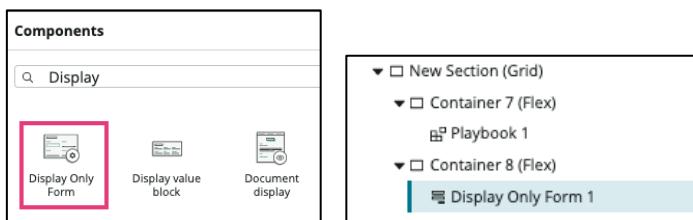
We now have two containers within the **New Section Container**.



- Let's add a playbook component in **Container 7**. Within **Container 7**, click **+ Add component**. Search for **playbook** from the **Components** pop-up. Select the **Playbook** component. Click **Save**. We will configure the component later.



- Let's add a Display Only Form component in **Container 8**. Within **Container 8**, click **+ Add component**. Search for **Display** from the **Components** pop-up. Select the **Display Only Form** component. Click **Save**. We will configure the component later.



- We will configure Data resource so that we can read the relevant data in the Playbook and Display Only Form component. Click the database icon on the left vertical icon bar, this will display the **Data resources** panel at the bottom. Click **+ Add** on the right side of **Data resources** title.

The screenshot shows the ServiceNow UI Builder interface. On the left, the sidebar displays the page structure under 'Content' and lists various components like 'Body (Flex)', 'Main (Flex)', and 'Container 7 (Flex)'. Below this, the 'Data resources' section is open, showing a list of local data resources. Two specific items are highlighted with red boxes: 'Global' under 'Applications' and the 'Look Up Records' item under 'Server data'.

From the data resources pop up, select **Global** under **Applications** column, select **Look Up Records** under **Server data** column. Click **Add** button.

This screenshot shows the 'Look Up Records' configuration dialog. The 'Applications' column on the left highlights 'Global'. The 'Server data' section in the center has 'Look Up Records' selected. The right panel displays the 'Description' and 'Configuration' sections for 'Look Up Records'. The 'Configuration' section includes options for 'Table', 'Conditions', 'Return fields', and 'Order by'. At the bottom right are 'Cancel' and 'Add' buttons, with 'Add' being highlighted.

Note that a new data resources is added to the bottom of the list with the label as **Look Up Records 1**. We will configure this data resources to extract the latest IP Registration request submitted by the logged in user. Let's first change the label of the data resource. Click the **i** icon. Replace the **Data resource label** with **Look Up IP Reg**, replace the **Data resource ID** with **look\_up\_ip\_reg**. Click **Apply**.

Next we will configure the data that needs to be read. In the Look Up IP Reg data resource configuration pane, enter **Table** as **IP Registration**. Click **Edit Conditions** and in the Conditions pop-up, add the condition as **Requestor is (dynamic) Me**, click **Apply**. Enter **Sort type** as **desc** and **Max results** as **1**.

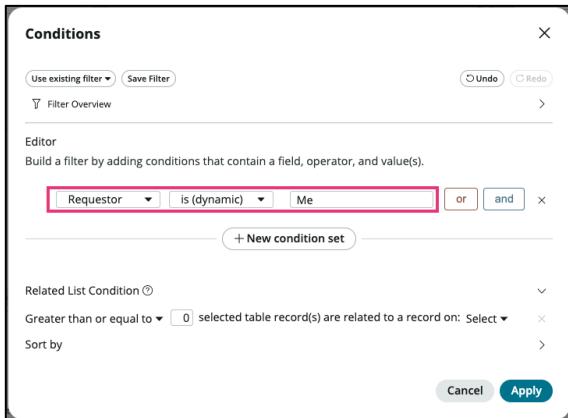
Note the output window on the right. Note the returned data record **Sys ID**, we will reference this value to display the record in the Playbook and Form Display component.

```

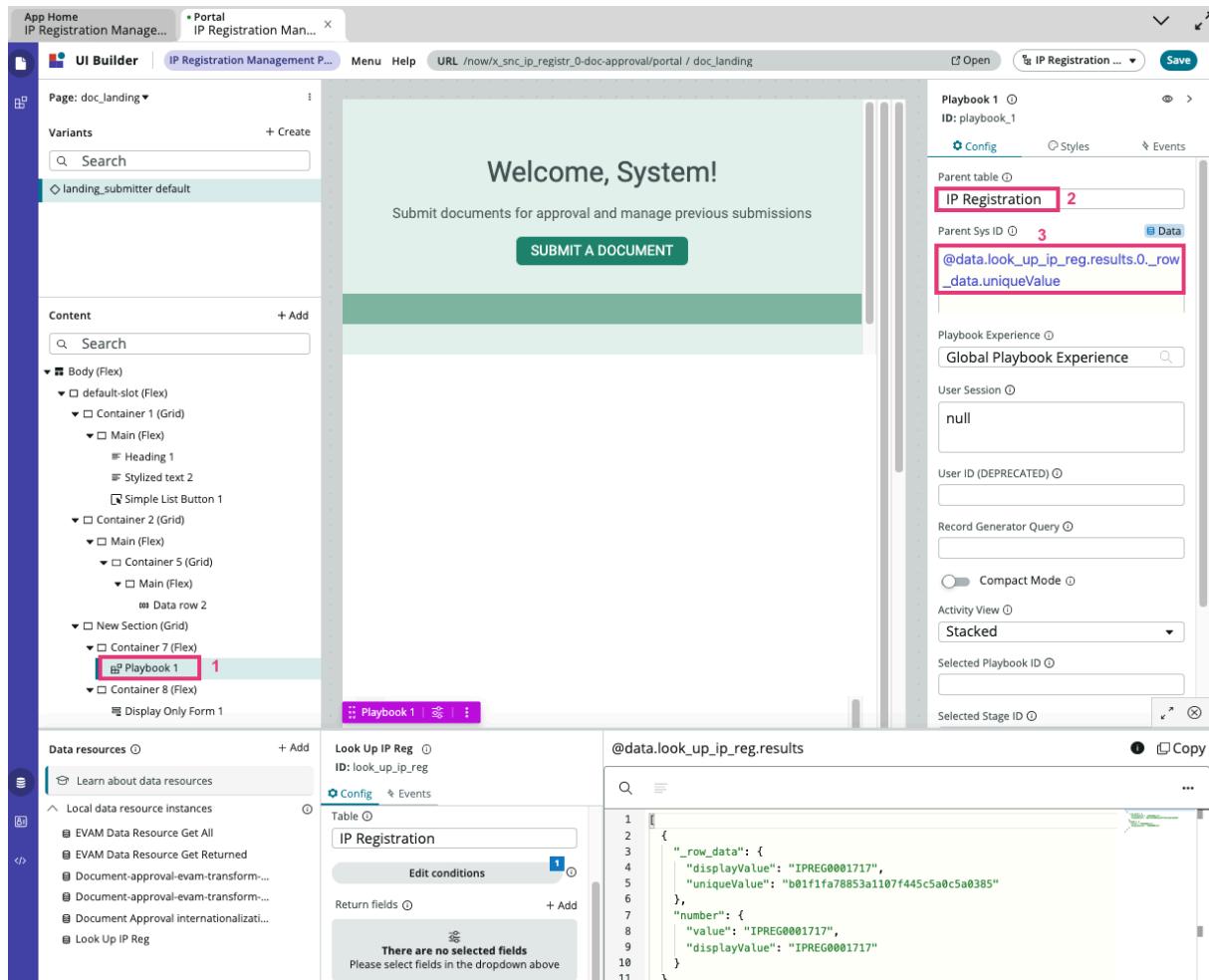
{
  "row_data": {
    "displayValue": "IPREG0001717",
    "uniqueValue": "b01f1fa78853a1107f445c5a0c5a0385"
  },
  "number": {
    "value": "IPREG0001717",
    "displayValue": "IPREG0001717"
  }
}

```

This window displays the retrieved data.  
Note the Sys ID of the returned record.



7. We now have enough information to configure the Playbook and Display Only Form component. From the **Content Panel**, select the **Playbook** component. From the Playbook Configuration panel located on the right side, enter **Parent table** as **IP Registration** and **Parent Sys ID** as **@data.look\_up\_ip\_reg.results.0.\_row\_data.uniqueValue**, this is the data resources that we have configured in the previous step.



- From the **Content Panel**, select the **Display Only Form** component. From the Display Only Form Configuration panel located on the right side, enter **Table** as **IP Registration** and **Parent Sys ID** as **@data.look\_up\_ip\_reg.results.0.\_row\_data.uniqueValue**. This will display the user's most recent submitted IP Registration request. Click **Save**.

The left pane shows the Content tree with various components like Body (Flex), default-slot (Flex), Container 1 (Grid), Main (Flex), Heading 1, Stylized text 2, Simple List Button 1, Container 2 (Grid), Container 5 (Grid), Data row 2, New Section (Grid), Container 7 (Flex), Playbook 1, Container 8 (Flex), and Display Only Form 1. The right pane shows a preview of a portal page titled "Display Only Form 1". It contains a "Config" tab, a "Table" section with a "Data row 2" card labeled "IP Registration", and a "Data" section with the expression "@data.look\_up\_ip\_reg.results[0].row\_data.uniqueValue". A red box highlights the "Display Only Form 1" component in the Content tree and the "IP Registration" card in the preview.

- From the top bar, click **Open** to preview the portal in a new browser tab.



You can see the newly added Playbook and Display Form component to the user's submitted information all in a single portal. We can further use UI Building to add formatting to the portal to make it looks nicer, but being concious of the workshop duration, we will leave that to your own time's exploration.

From the portal, click through the playbook and to experience prescriptive guidance embedded with process automation.

Welcome, System!

Submit documents for approval and manage previous submissions

**SUBMIT A DOCUMENT**

**Document Approval request records created automatically from our workflow**

**All Documents** VIEW ALL →

Document Category	Date Submitted
Intellectual Property ...	2023-06-14 14:43:18

Document Category	Date Submitted
Intellectual Property ...	2023-06-14 14:43:18

Document Category	Date Submitted
Contract	2023-06-14 04:03:29

**Playbook with prescriptive guidance**

**Intellectual Property Pro... ▾**

**Upload All IP Documents** 2 remaining 1

**Legal Review** 1 remaining

**Upload All IP Documents**

**In Progress**

**IP Documents Upload**

Please ensure that all your relevant IP registration documents are uploaded. The fundamental mandatory documents include IPD form AAA and your IP specification document.

**MARK COMPLETE** **SKIP**

**Pending Automated Task**

**Update Record**

Please wait while Playbook progresses.

**IP Registration**

**Display Form**

Number	IPREG0001717	State	Work in Progress
Assigned to	System Administrator	IP Category	Patent
Requestor	System Administrator	Work Stage	1 - Submitted IP Registration Request
Approval		Not Yet Requested	
Active			
Description		Testing	
Work notes		—	

Note that when you click **Mark Complete** from the first step of the **playbook**, the **Work Stage** will be updated to **2 – Submitted IP Documents**. This is how we configured the automated process using PAD (playbook).

The screenshot displays two main panels: 'IP Registration' and 'Upload All IP Documents'.

**IP Registration:**

- Number: IPREG0001717
- State: Work in Progress
- Assigned to: System Administrator
- IP Category: Patent
- Requestor: System Administrator (Assigned to System Administrator)
- Work Stage: 2 - Submitted IP Documents (highlighted with a red arrow)
- Active: checked
- Approval: Not Yet Requested
- Description: Testing
- Work notes: —

**Upload All IP Documents:**

- Task status: Complete
- Task name: IP Documents Upload
- Sub-task status: Complete
- Sub-task name: Automated Task
- Sub-task description: Update x\_snc\_ip\_registr\_0\_ip\_req
- User assigned: Assigned to System Administrator

Congratulations, we have successfully created an application for handing IP Registration Requests!

## Exercise 5: Demo on Citizen Development Governance

This will be a Demo by the Workshop host.