knowledge14
April 27–May 1, 2014 • Moscone Center • San Francisco, CA

Lab Guide

Team Development:

Beyond Update Sets

Michael Hoefer & Tulio Quinones

Lab instance: https://**<<name>>**.lab.service-now.com

Login / Passwords:

admin / admin

Caveat Emptor

This lab is about **Team** Development.

There is no "I" in Team, *so you will need at least one **partner** for this session (2 partners are preferred)*. Yes, sadly, this requires human contact with someone sitting next to you. You could attempt to sit far from one another but the yelling and throwing of things would probably be a distraction for your humble instructors, who are fragile enough as it is.

We know how you feel and apologize in advance.

- Mike and Tulio

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Lab Goal

- Setup up our ServiceNow instances for Team Development.
- Get to know the Team Dashboard.
- Understand Local Changes.

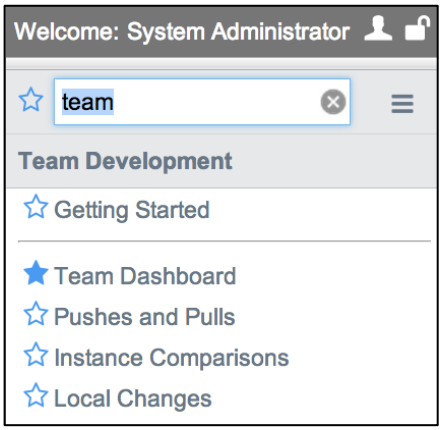
Lab 1
Setup and the Basics

Choose a Partner and Access Your Instances

The instructor will provide you with one child development instance for yourself and one parent instance to share with your partner(s).

1. Identify which instance is your child development instance and which is your shared parent instance. Log on to your **child** development instance with your admin credentials.

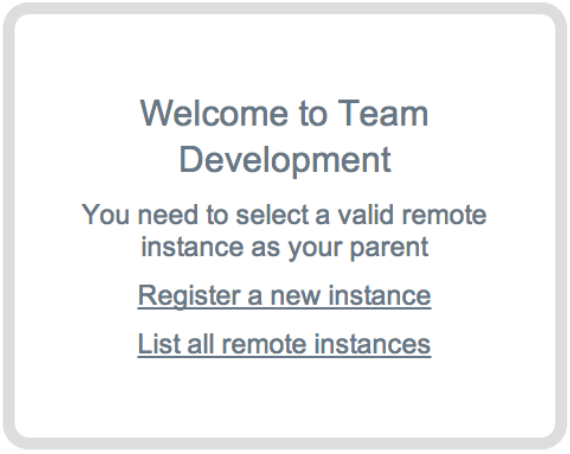
2. Navigate to **Team Development > Team Dashboard**.



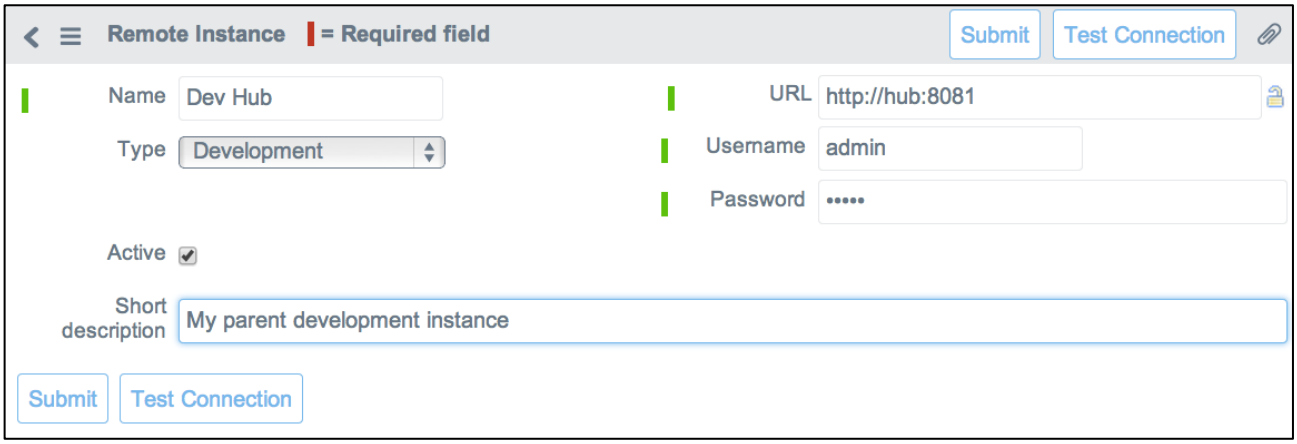
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Register your Parent Instance

1. Click the **Register a new instance** link.



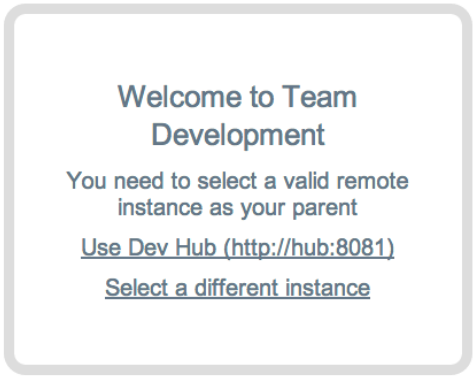
2. Enter the **parent** instance values provided by the instructor for the name, URL, and credentials and click the **Submit** button.



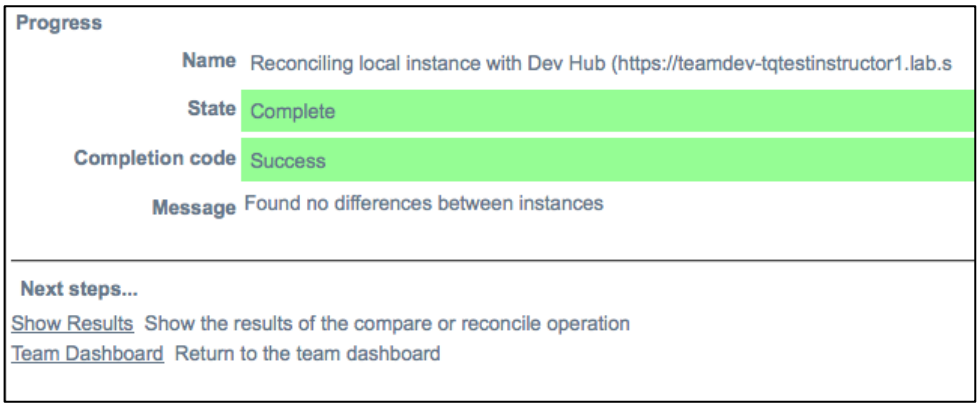
3. Click the **Test Connection** to confirm successful connection with parent instance.

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4. Now that you have registered an instance, click **Use Dev Hub (https://<yourparentinstance>.lab.service-now.com)** to select it as your parent.



5. Your child instance will now compare itself with its parent and produce a list of Local Changes. This Reconcile process will take longer the more versions exist on your instance. In this lab, you will have almost no existing versions so the process will complete quickly.



Local Changes are tracked relative to your current parent instance. If you switch parent instances, your new parent may already have your local changes. Thus a reconciliation process is needed whenever you select or switch parents.

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Customize your Dev Hub (Parent) Instance

It is important to know on which instance you are working. You can use System Properties and CSS to make that clear.

1. Log on to your **parent** instance.

2. Navigate to **My Company**.

3. Change banner text to **DEV HUB**:

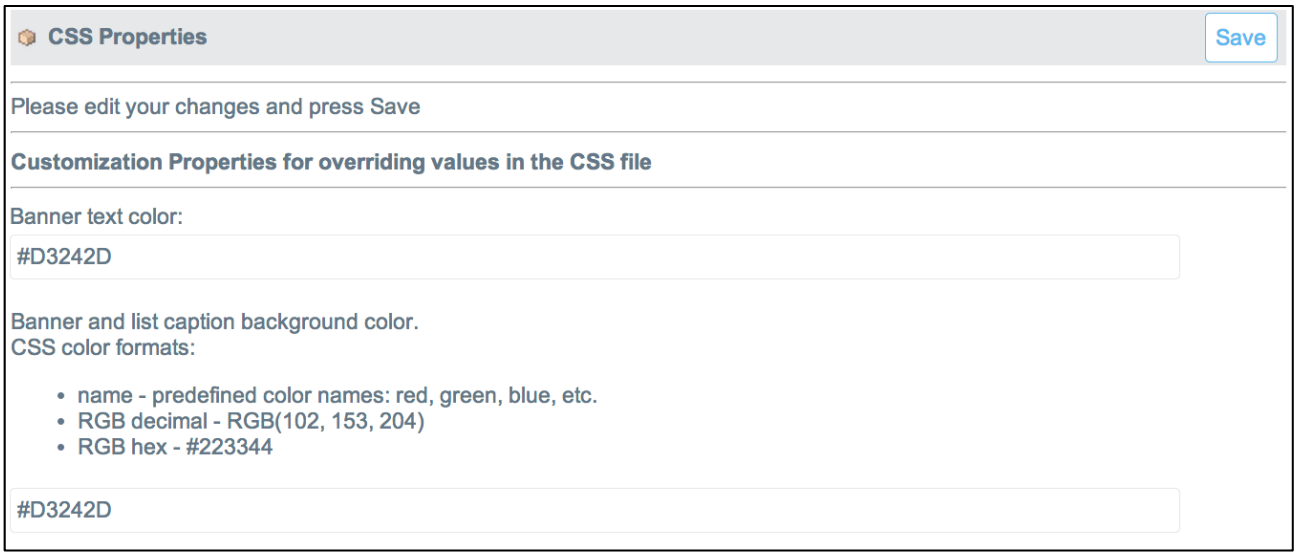


4. Select the **Update** button to save the change.

5. Navigate to **System Properties > CSS**.

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6. Change **Banner text color** and **Banner and list caption background color** both to **#D3242D** (a nice familiar red).



Click **Save**, then refresh browser window to see your changes reflected in the banner.



Customize your Child Instance

Now, you and all of your teammates repeat the steps above on your respective child instances, choosing your own title and color scheme. Any title and color other than **DEV HUB** and **#D3242D** are acceptable.

1. Log on to your **child** instance.

2. Navigate to **My Company**.

3. Change **Banner text** to your own title, such as **TEAMDEV HERO**, and click **Update**.

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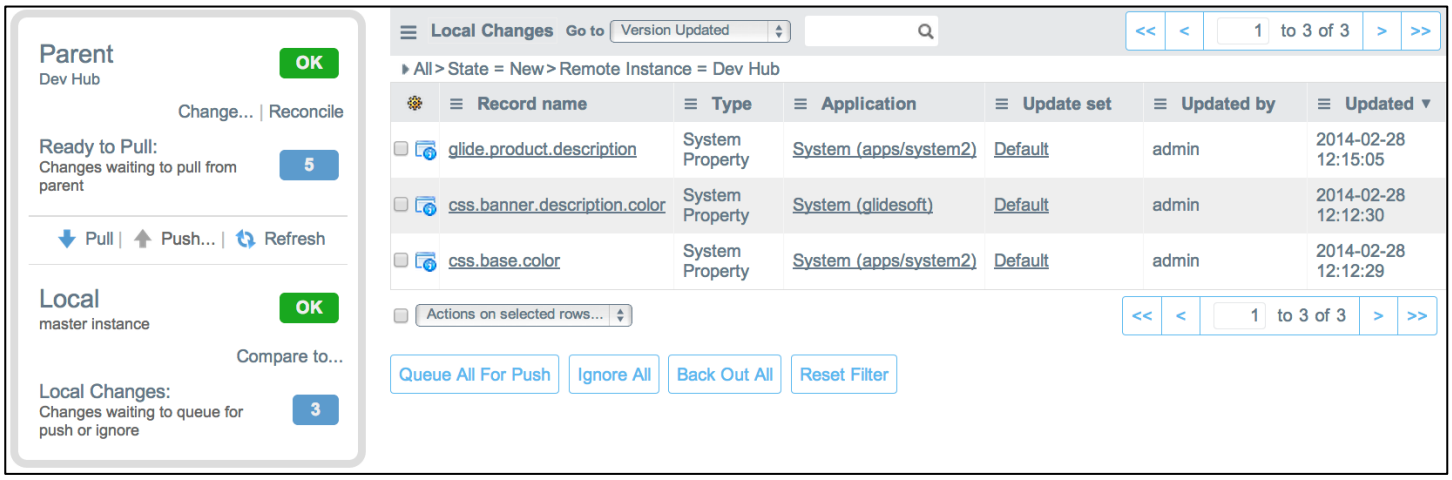
4. Navigate to **System Properties > CSS**.

5. Change **Banner text color** and **Banner and list caption background color** to your favorite color, such as **black**, click **Save** and refresh your browser once more.

Understand your Changes (Child instance)

You have made some changes now on both your parent Dev Hub as well as your child instances. Now let us see how that impacts the Team Dashboard.

1. On your child instance, navigate to **Team Development > Team Dashboard**.



2. Now under **Local** Changes you see the system property changes you just made. You also see in the left-side control panel some interesting controls and notifications.

Parent OK	Parent instance information and status
Change… | Reconcile	Actions to change your current parent, or explicitly trigger a reconcile against your current parent
Ready to Pull: 5	Number of changes detected upstream from you in your parent instance since the last time you pulled

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Pull | Push… | Refresh	Actions to pull changes down from your parent, push changes back up, and refresh the dashboard UI
Local OK	Local child information and status
Local Changes: 3	Number of local changes not found on your parent, available to be pushed upstream

As a result of your System Properties customizations on both the child and the parent instances, we see both local changes and remote changes ready to pull.

Lab Success Verification

- ✓ You and your partners should now have your instances configured with your shared Dev Hub parent and ready to start developing in parallel.
- ✓ You have a few changes ready to pull from your parent Dev Hub to your child and a few local changes available to push from your child to your parent.
- ✓ You understand the basic features and controls of the Team Dashboard and are ready to do some actual work!

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Lab Goal

Learn how to **back out** changes you do not wish to keep.

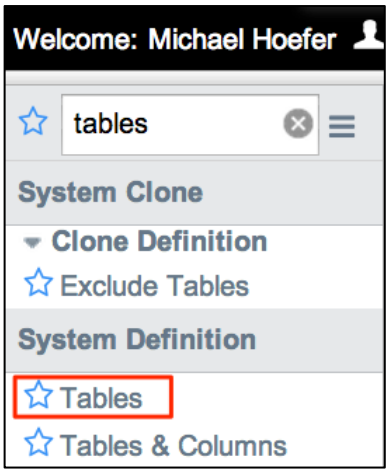
Lab 2
Back Out changes

Create a Field (Child instance)

You have been meaning to add a new True/False field to your Incident form to identify showstopper incidents.

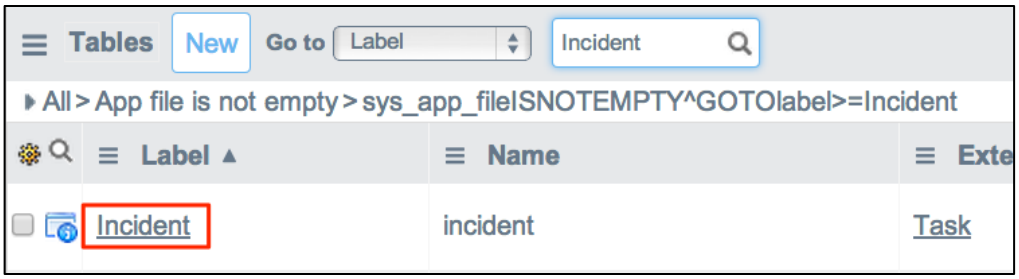
Note: You will be purposely making a mistake here and may feel unnatural because you are already a rock star admin.

1. On your **child** instance, navigate to **System Definition > Tables**.

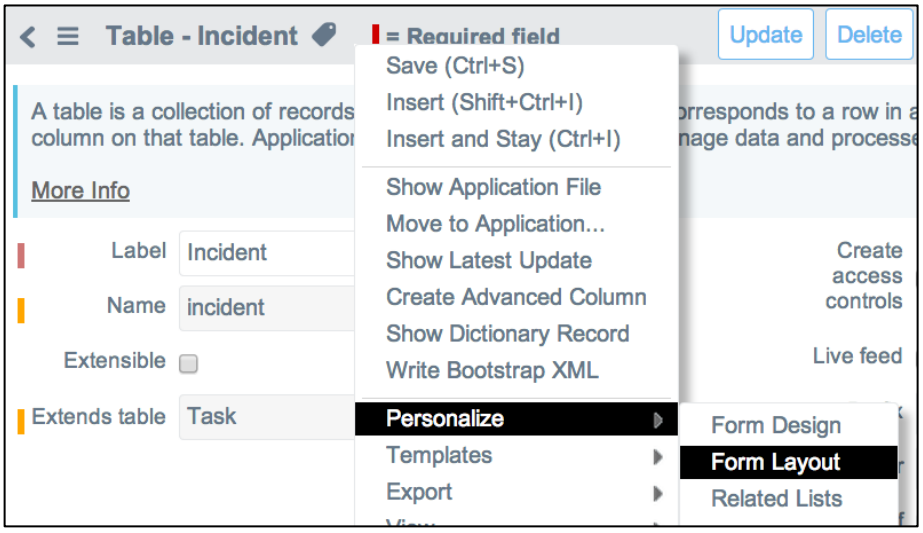


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2. Locate the **Incident** table in the list by filtering by label. Open the Incident table form by clicking its name.



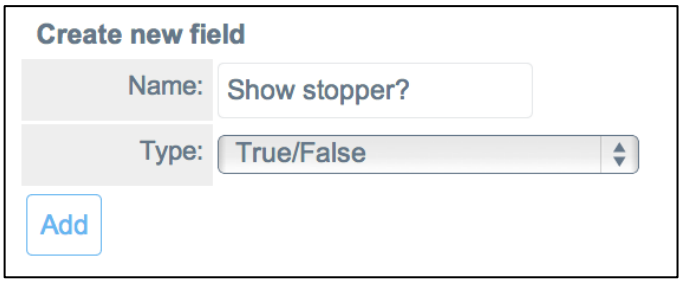
3. On the table form, right-click on the header and select **Personalize > Form Layout**.



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4. Under **Create new field**, enter the following values and click **Add**:

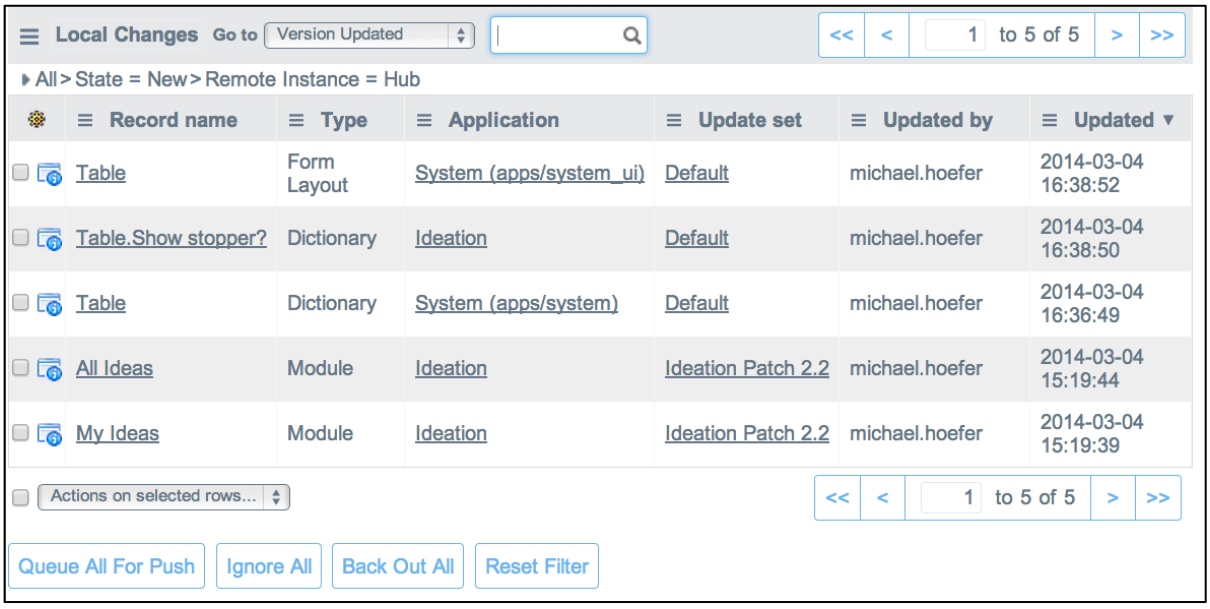
   Name: Show stopper?
   Type: True/False



5. Click **Save**.

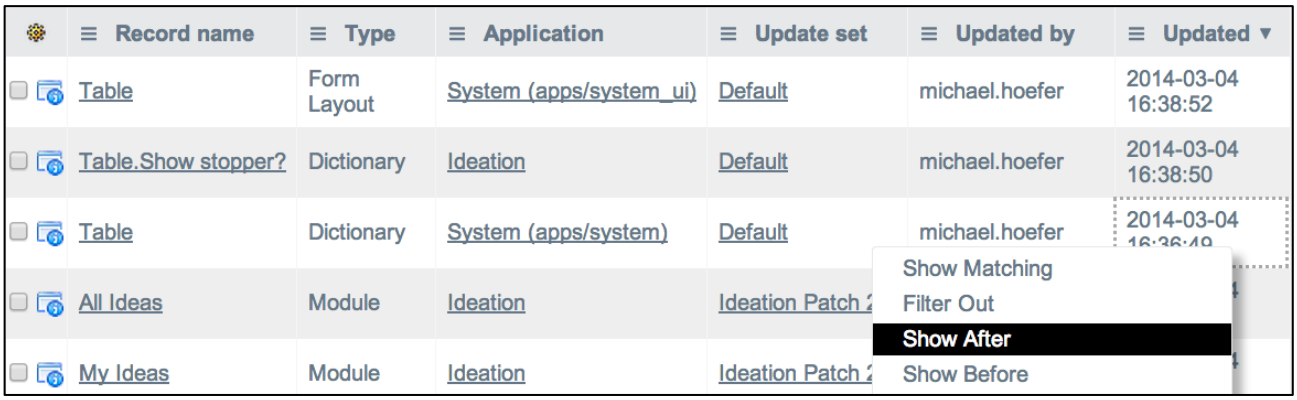
6. Realize what you have done. Apply your face to your palm.

7. Navigate to **Team Development > Team Dashboard**. Find the changes you just made in the **Local Changes** list.



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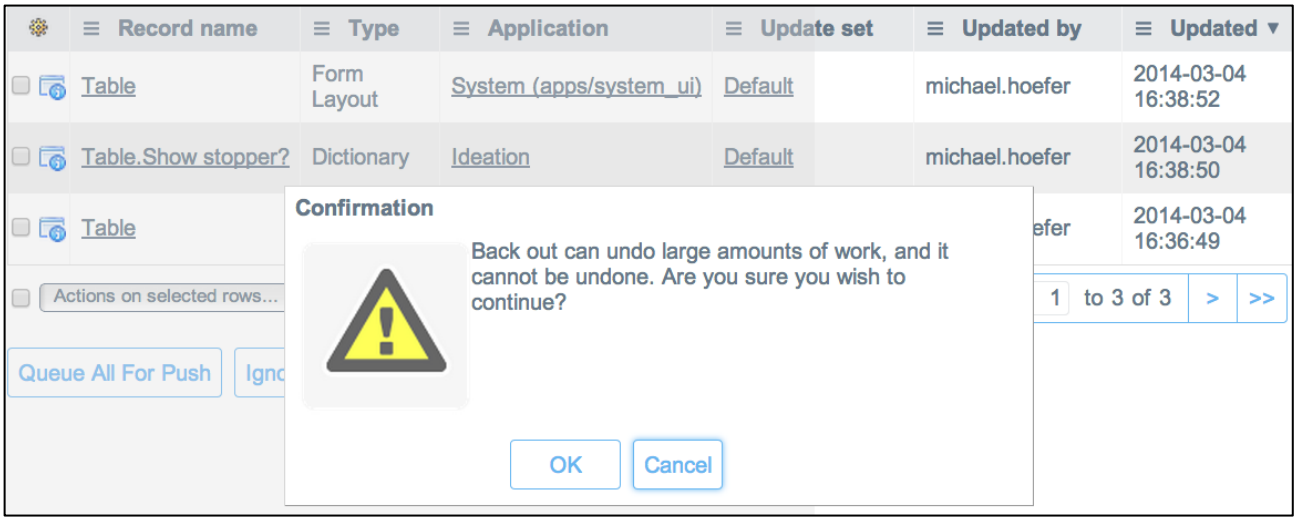
8. If you have more changes than the ones you need to back out, sort the list by to show most recent updates first, clicking the **Updated** column header. Then right-click the **Updated** cell of the oldest of the change you wish to back out and select **Show After**. (Or filter out changes you wish to keep by any other criteria you see fit.)



9. When the local change list shows only those changes you wish to back out, click **Back Out All**.

   Warning: Back Out All will back out all changes displayed in list view regardless if they "checked" or not. Confirm list is only displaying changes you want to back out.

   When prompted to confirm, double-check that you have indeed filtered for the changes you wish to back out. This cannot be undone. When ready, click **OK**.



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10. Navigate to **System Definition > Tables**.

11. Right-click on the list header and select **Personalize > List Layout**. Verify that the **Show stopper?** Field you accidentally added to Table is no longer present.

Back Out Change does more than just revert versions. It will determine the last version pulled from or pushed to your parent instance, if any, and revert to that. Or, if no such version can be found, the record and its version history will be completely erased.

Lab Success Verification

- ✓ You learned how to back out one or more local changes.

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Lab Goal

- Learn how to **pull** changes from your parent
- **Resolve collisions** when other people change the same files as you do
- **Ignore** local changes that you never want to push upstream.
- Create an application your team can develop together in parallel.

Lab 3
Pulling changes

Pull Changes from your Dev Hub (Child instance)

Before getting started on your application we will pull ready changes from your parent and resolve any collisions we find.

1. From **child** instance navigate to **Team Development > Team Dashboard**.

2. In the Team Dashboard control panel, click the **Pull** action. The standard progress worker screen will appear to report the status of the pull.



3. When the progress worker finishes, you should see a message explaining that while the pull itself was successful, you encountered some anomalies. Your message will read something like this (your numbers will vary based on the actual changes you have made on your instance):

   Pulled 9 versions of 5 files from parent but loaded 1 change. The remaining changes were not loaded for the following reasons: 3 were collisions, 3 were history versions, 2 were already found. Please resolve any collisions before continuing.

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This message means:

- Nine new versions were detected on your parent since the last time you pulled or reconciled. Those nine modifications were made to five distinct files, which means the same record was modified multiple times, and you pulled both the current and the historical versions.

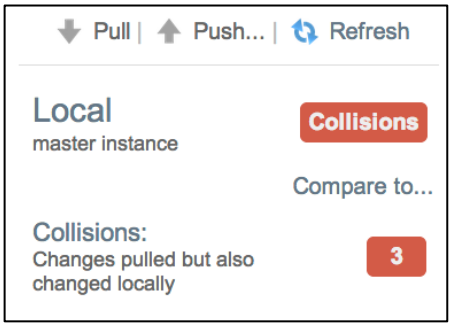
- Of all nine versions, only one was actually loaded. (**Loaded** means the change was actually committed to the target table in the local instance.)

- Of the remaining eight, three versions resulted in collisions. This makes sense, since you modified the same three system properties on both child and parent instances. These are not loaded unless you decide to do so while resolving each collision (which we will do a bit later).

- Of the remaining five, two versions were already found locally. The same version cannot be inserted twice, and will certainly not be loaded.

- The remaining three were all new historical versions, inserted locally but not loaded. Only current versions can be loaded. History versions are pulled and stored purely for historical reasons.

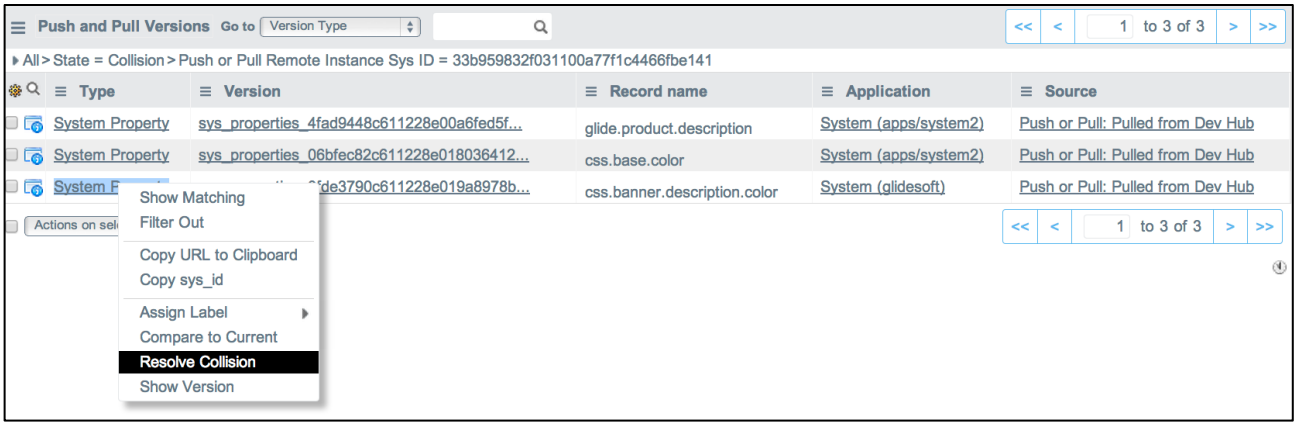
4. Click the **Team Dashboard** related link to return to the dashboard. Your control panel will now show the collisions you must next resolve.



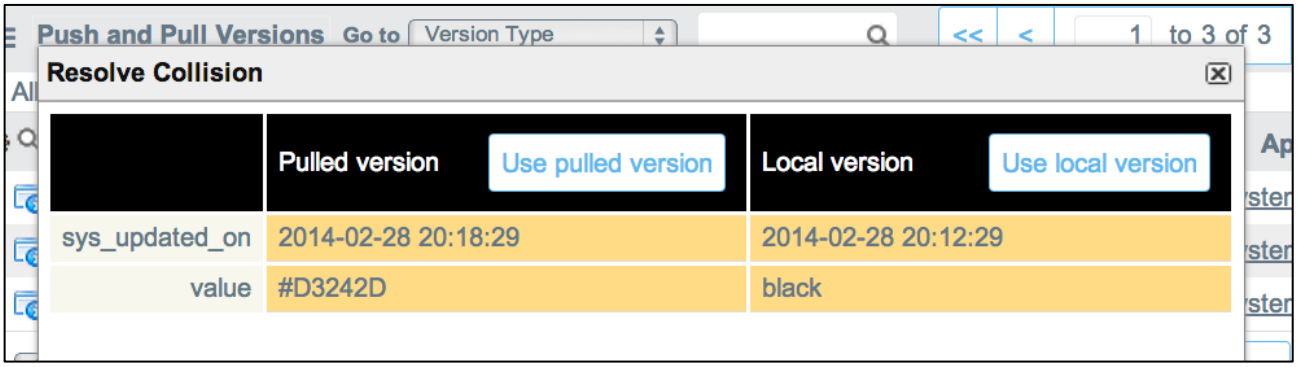
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5. The red **Collisions** pill is a link. Click it to navigate to the list of colliding versions.

6. Right-click on one of the versions and click **Resolve Collision**



7. In the comparison popup window you can see both versions: the pulled version from your parent, and the local version. In order to resolve this collision, you must click either the **Use pulled version** or the **Use local version** buttons.



Since these are the system properties you customized to uniquely identify your local instance, you want to keep your local changes. You do not want your child instance looking like your parent. So, click **Use local version**.

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8. Now you have two remaining collisions on your list. You already know what you want to do with these, however, without looking at them. In this case, you can use the choice list actions to resolve the collision without launching the comparison dialog. Select all rows and click **Use local version** from the list action menu.

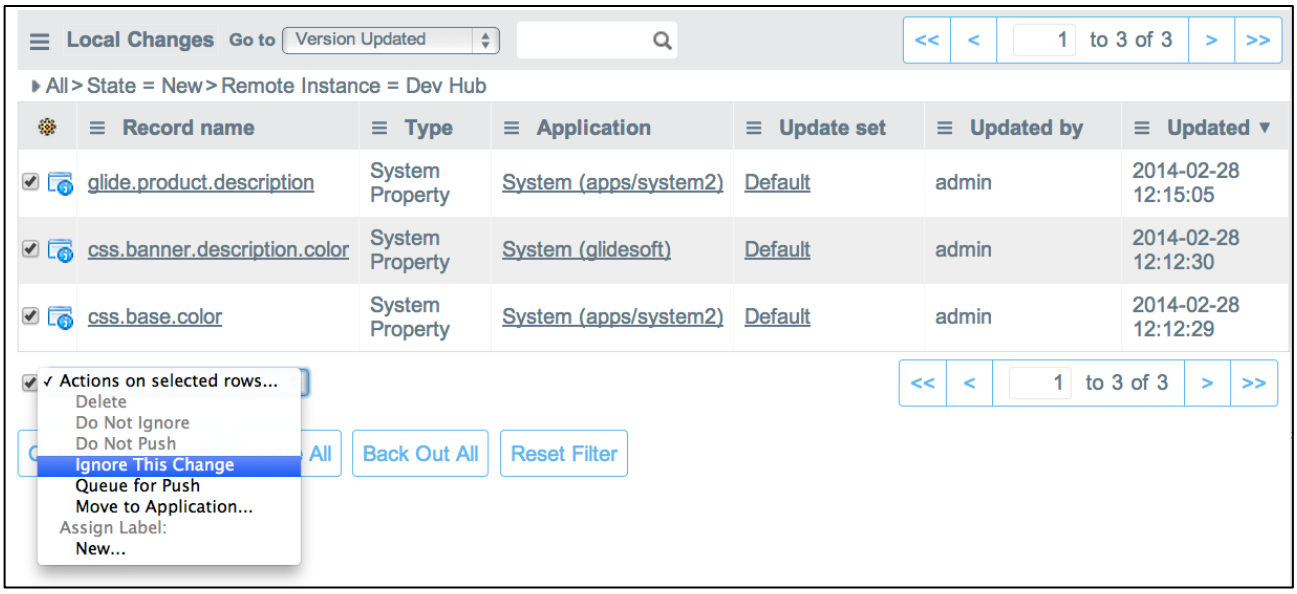


9. Navigate to **Team Development > Team Dashboard**, and look at your list of local changes.

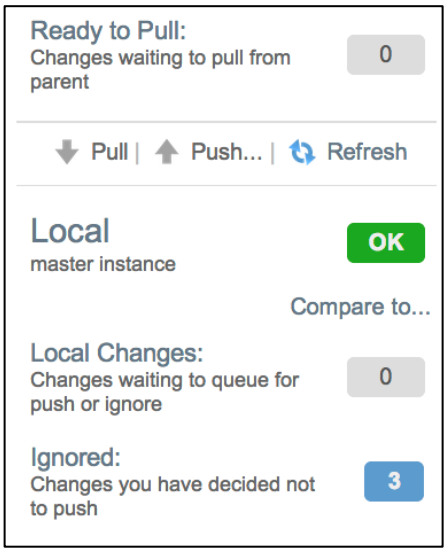
   You see the same three properties appearing here because you chose to keep your local versions. However, not only do you *not* want to load these properties *from* your parent, you also do not want to ever *push* these properties *to* your parent. You also, however, do not want these appearing in your Local Changes list. In this case, you can choose to *ignore them*.

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10. Choose the three system properties (**glide.product.description**, **css.banner.description.color**, and **css.base.color)** and select **Ignore This Change** from the list action menu.



11. Once your page reloads, you should now see a control panel with no incoming changes, no local changes, no collisions, and three ignored changes.



Ignored changes are not lost. If you ignore a change, it is moved to the Ignored state and appears in the Ignored tab in your dashboard.

If you change your mind, find the change in the Ignored list and click **Do Not Ignore**.

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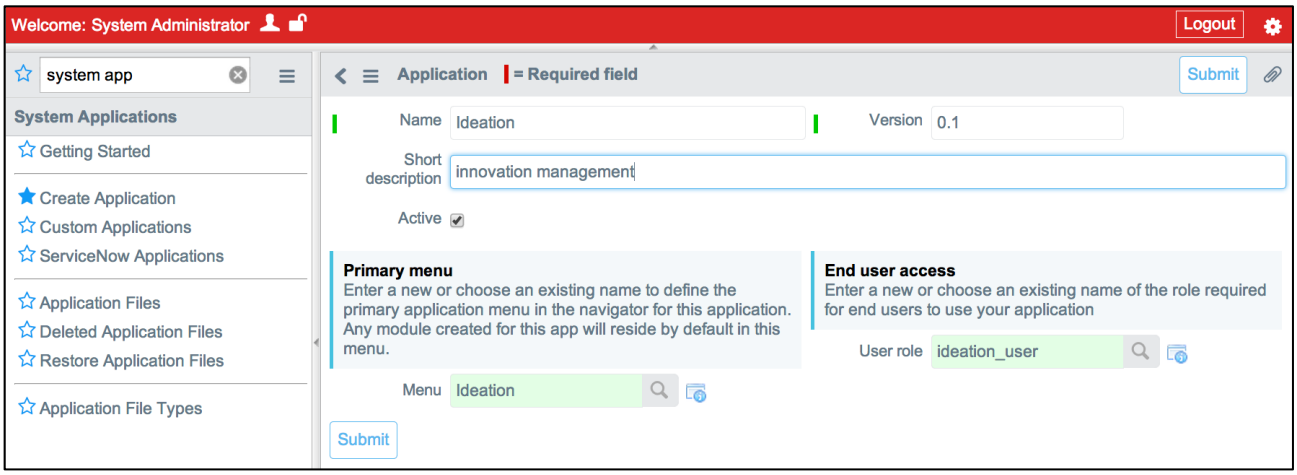
Create a New Application in your Dev Hub (Parent instance)

For this lab, we want one of you to create a new application in the parent instance (DEV HUB) and all of you will pull it down into your own child instances.

1. Choose one of your team members to log on to your **parent** instance (DEBV HUB) with admin credentials.

2. On your Dev Hub **parent** instance, navigate to **System Applications > Create Application**.

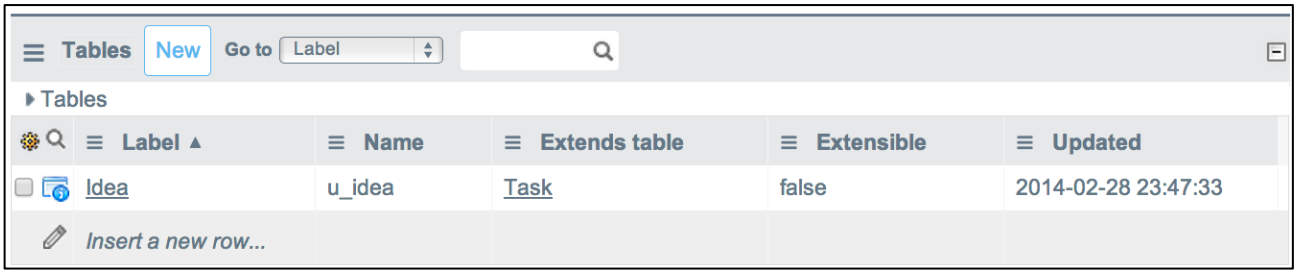
3. Create a new application called Ideation.



4. Click **Submit** to save the application

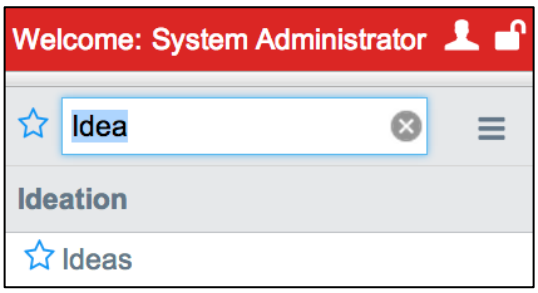
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5. On your Ideation application form, under the Tables related list double-click **Insert a new row…** to create a new table for your app called Idea. Let it extend Task, and do not worry about adding any additional fields at this time.



6. Click the save icon (Disk) in the row to save the new Idea table.

7. Find your new application table in the navigator by typing **Idea**.



Adding or changing files upstream has historically been frowned upon. If you make a change in production, for example, it is very important to make the same change in all of your sub-production instances as well. This is relatively expensive and error-prone if done manually, or by creating an update set in production to be distributed elsewhere.

With Team Development, this is now very simple. Any change made upstream, such as creating our **Ideation** application, can simply be pulled to downstream instances with a single click as you will see below.

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Pull your Application into your Child Instances (Child instance)

Now that your application is available in your Dev Hub, you can pull it into each of your team's child instances.

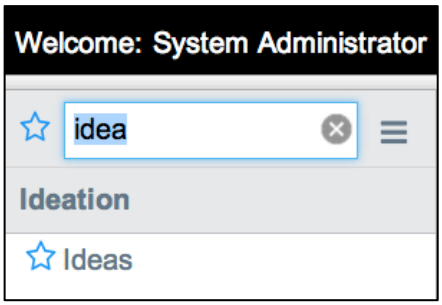
1. On your own **child** instance, navigate to **Team Development > Team Dashboard**.

2. Click **Pull** in the dashboard control panel.



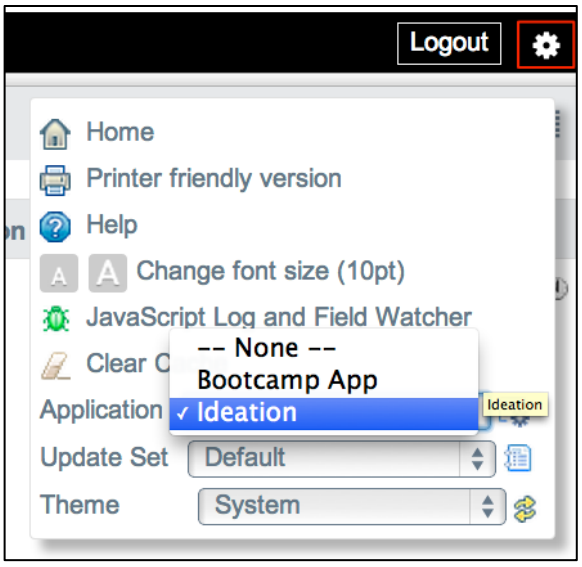
3. When finished, click the **Team Dashboard** link to return from the progress worker results screen. You should have no further changes waiting to pull.

4. Navigate to **Ideation > Ideas** to see your application table pulled to your child instance.



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5. In the banner configuration menu select **Ideation** in your application picker. This will ensure all files you add going forward will be associated with your Ideation app.



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Lab Success Verification

- ✓ You have learned how to **pull changes** made on your parent instance to your child instance with a single click.
- ✓ You understand how **collisions** occur and how to resolve them.
- ✓ You learned how and when to **ignore** local changes and how to prevent them from being pushed up to your parent.
- ✓ Your Ideation application, originally created on your parent Dev Hub is pulled, loaded and functional on your child instance.

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Lab Goal

Make a few changes to your application in parallel on your child instances and learn how to **push** them to your parent.

There are five tasks below for your team to develop and push to your parent instance. The first task can be done as group in order to learn how to push local changes. Divide the remaining amongst yourselves and execute them from different child instances. Feel free to make up more of your own.

Lab 4
Pushing changes

Divide the following tasks between you and your partner(s)

Task 1 – Open Module ***(With you partners to learn how to push local changes)***
Task 2 – Layout Form Fields
Task 3 – Layout List Columns
Task 4 – Add Modules
Task 5 – Define Auto-number

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Prerequisite: Learn How to Push Local Changes (Child instance)

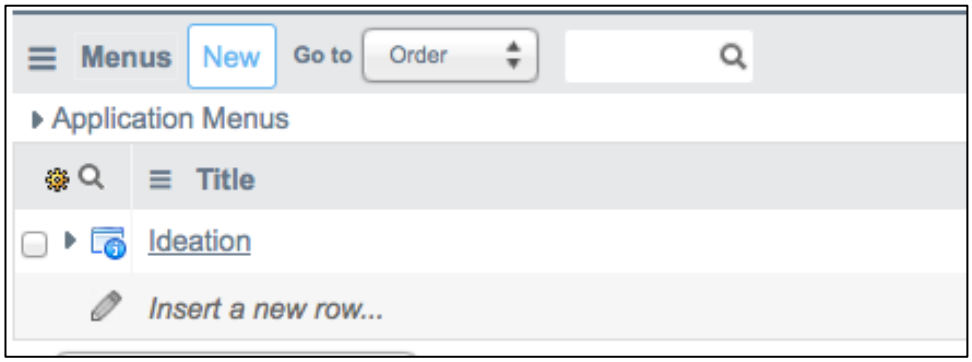
Task 1 – Open Module

As a group with your partners, read through the steps here to learn how to push the changes you make. You will follow these steps after completing each.

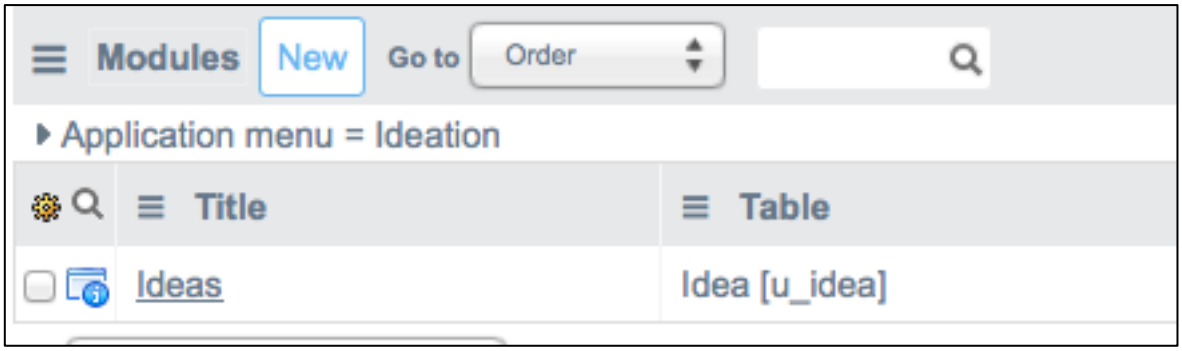
1. Navigate to System **Applications > Custom Applications**

2. Open **Ideation** application

3. Open Ideation **Menu**

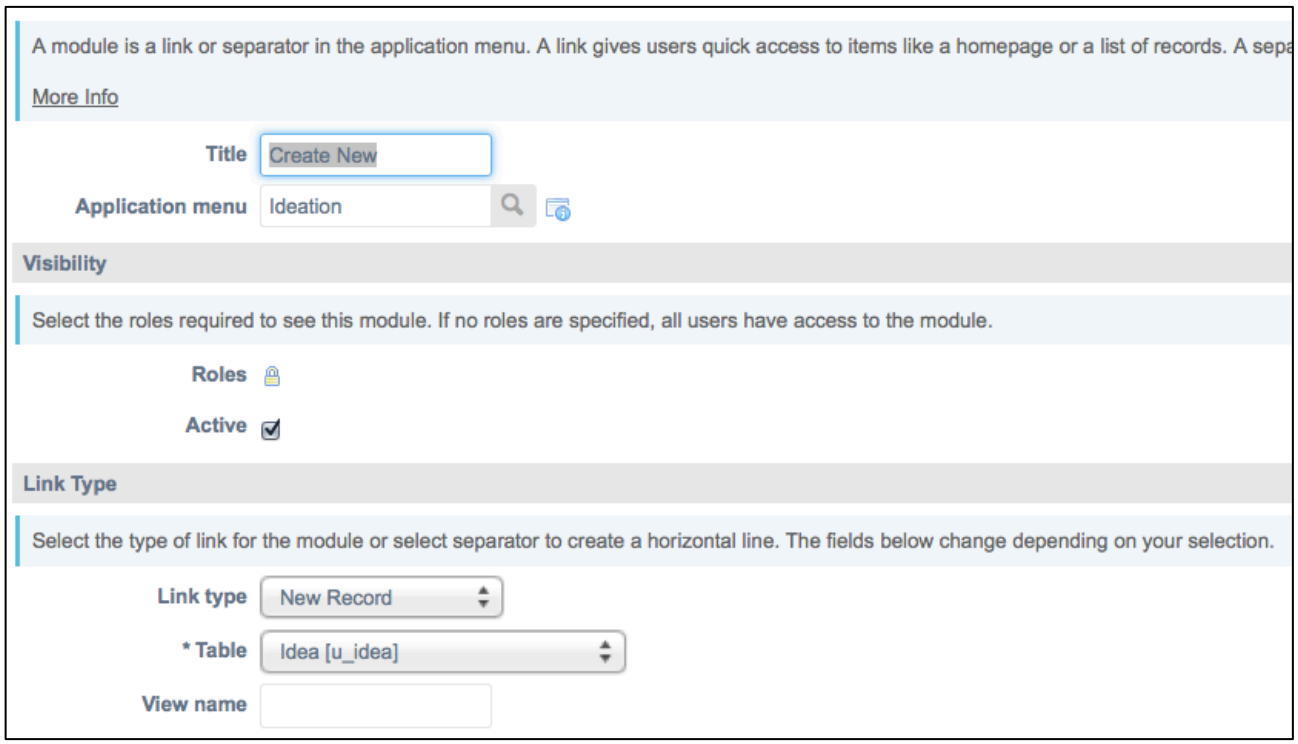


4. Add module by clicking **New** button



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5. Enter values per below:

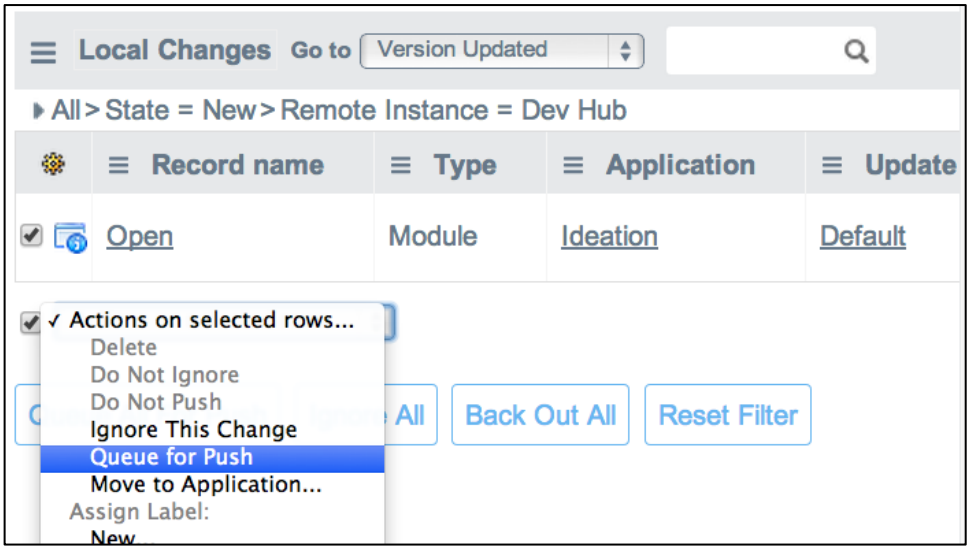


6. Click **Submit** to save module

7. Navigate to **Team Development > Team Dashboard**.

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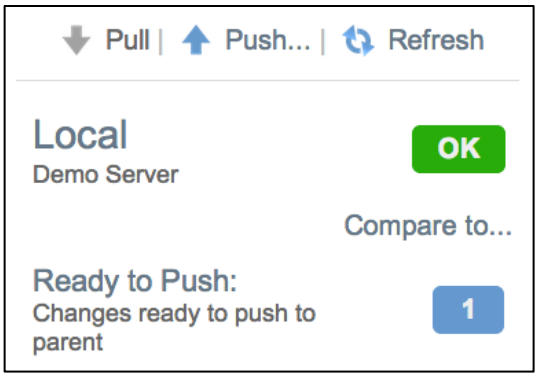
8. The **Local Changes** list will contain the changes you just made, and possibly others. Select the changes you made in the completed task, and click **Queue for Push** in the list choice action menu.



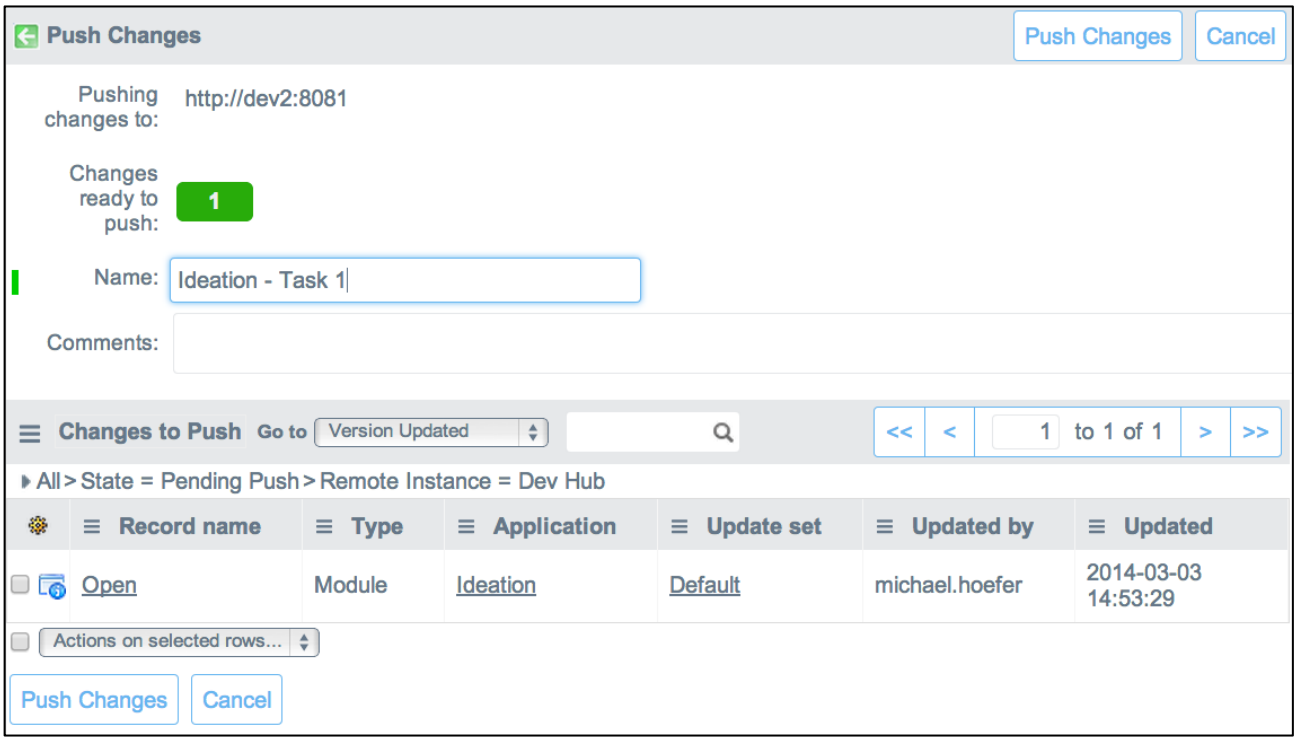
The Local Changes list has a few buttons that operate on large sets of changes: Queue All For Push, Ignore All, and Back Out All. These 'All' actions operate against all records that match your current filter in the local changes list. If your filter matches more records than fit on one page of results, clicking these actions will operate against all of them.

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9. Now that you have at least one change queued for push, the **Push (blue up arrow)** action is enabled on your dashboard control panel. Click it to proceed.

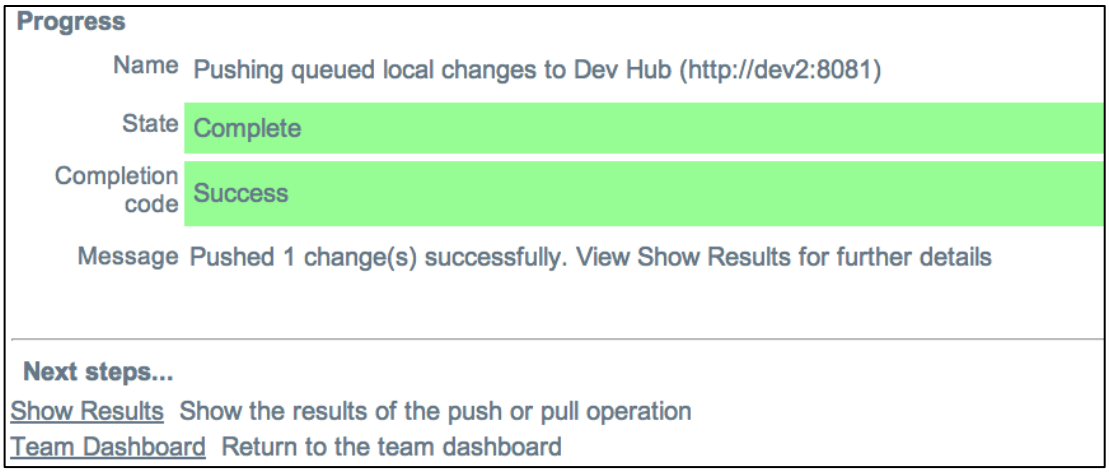


10. On the **Push** screen, enter an appropriate name to identify your change set: **Ideation - Task 1**.



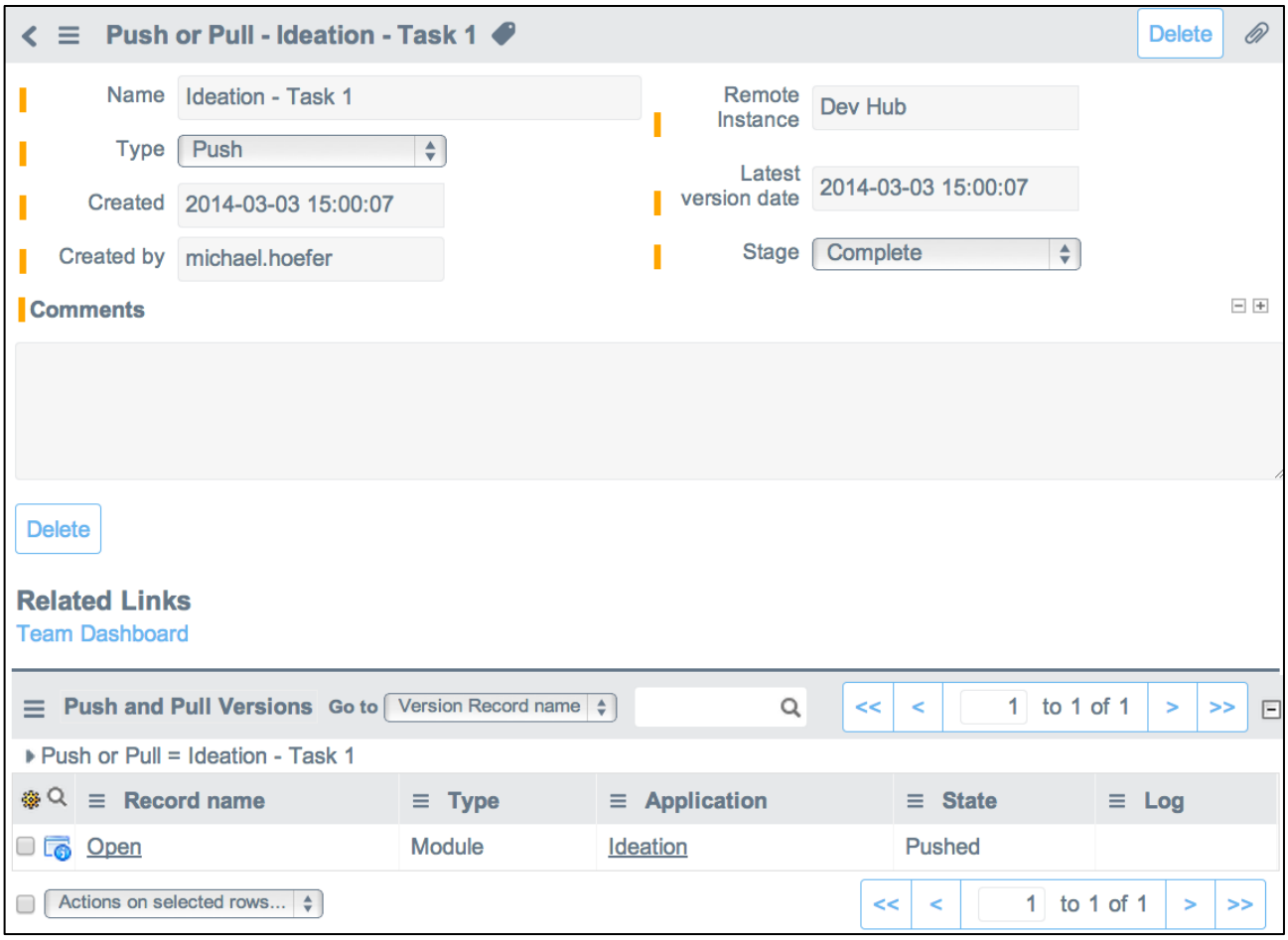
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11. Click **Push Changes**. When the progress worker screen shows complete, click **Show Results** to check the final status of the push.



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12. Check the **Push and Pull Versions** related list to see the individual states and possible log messages for each change.



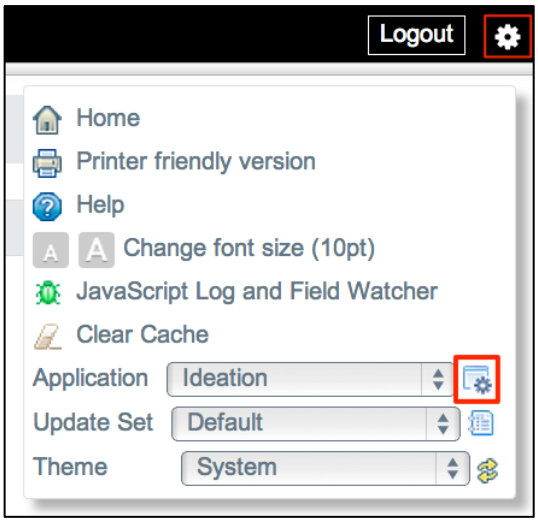
13. If desired, log on to your Dev Hub instance to very your change is live (refresh navigator to view).

Divide tasks 2 – 5 to your partners and repeat steps 7 -13 from above for each task.

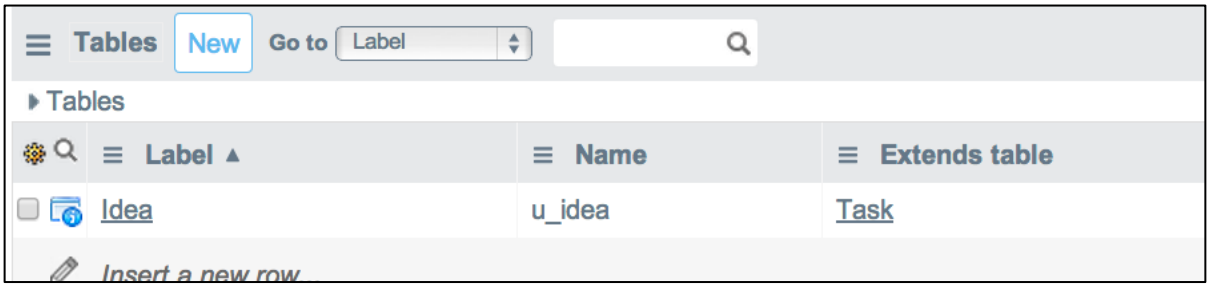
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Task 2 – Layout Form Fields (Child instance)

1. Navigate to your Ideation application by navigating via **System Applications > Custom** Applications, or more quickly by using the Application Picker.

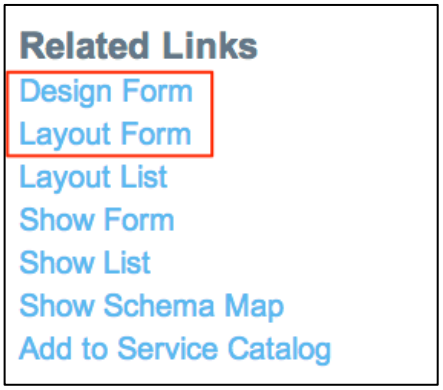


2. In the related **Tables** list, click the **Idea** table to open it.

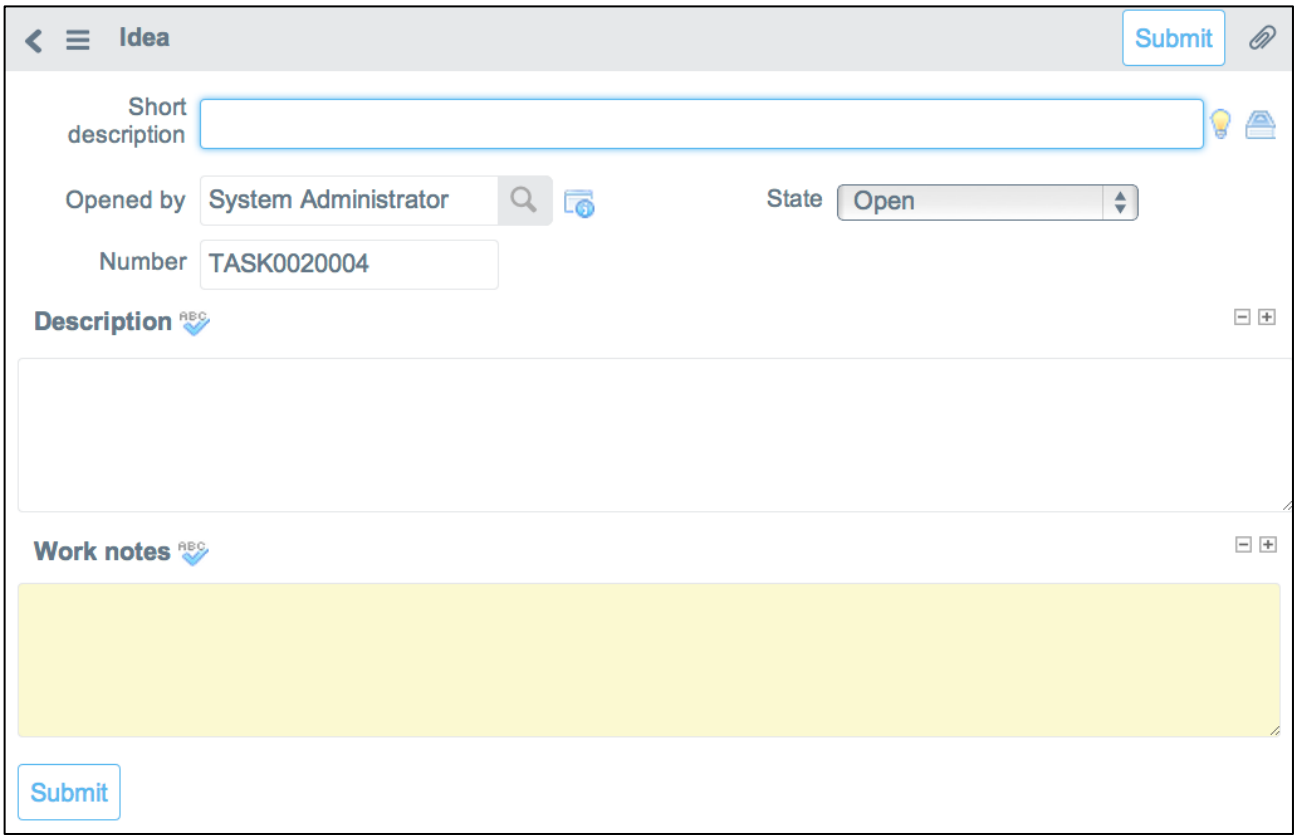


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3. Click either the **Design Form** (drag-n-drop) or **Layout Form** (traditional) related link to arrange your form fields.

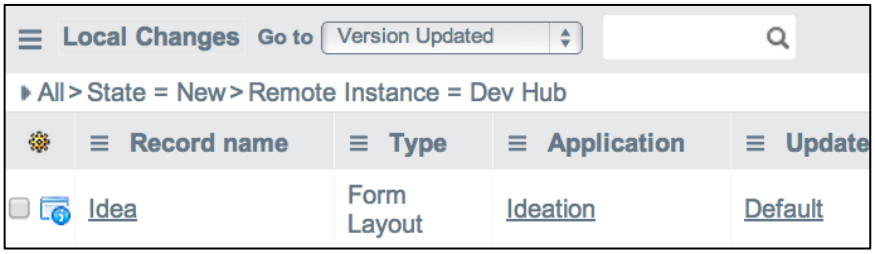


When finished, your form should resemble:



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4. **Push** your **changes** as described above.

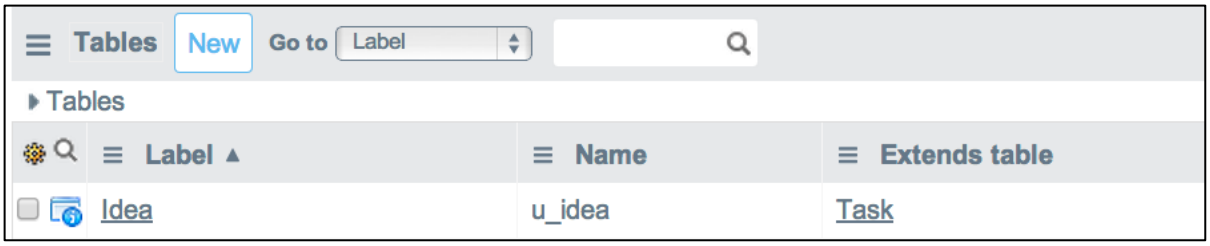


Task 3 – Layout List Columns (Child instance)

1. Navigate to your Ideation application form using the application picker.

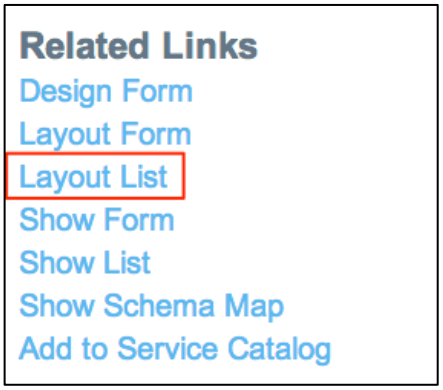


2. In the related **Tables** list, click the **Idea** table to open it.

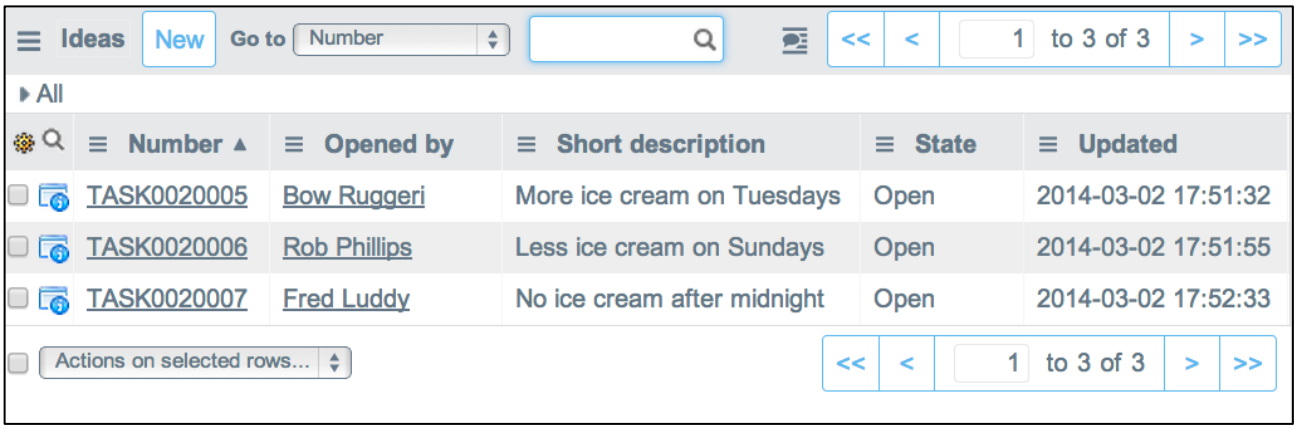


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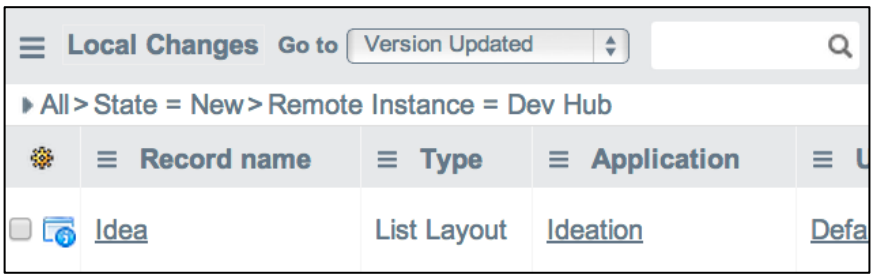
3. Click the **Layout List** related link to arrange the columns in your list.



When finished your list should look like this:



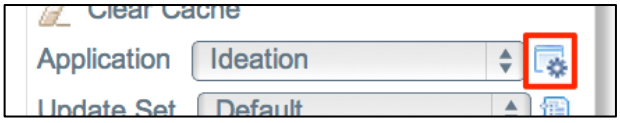
4. **Push** your **changes** as described above.



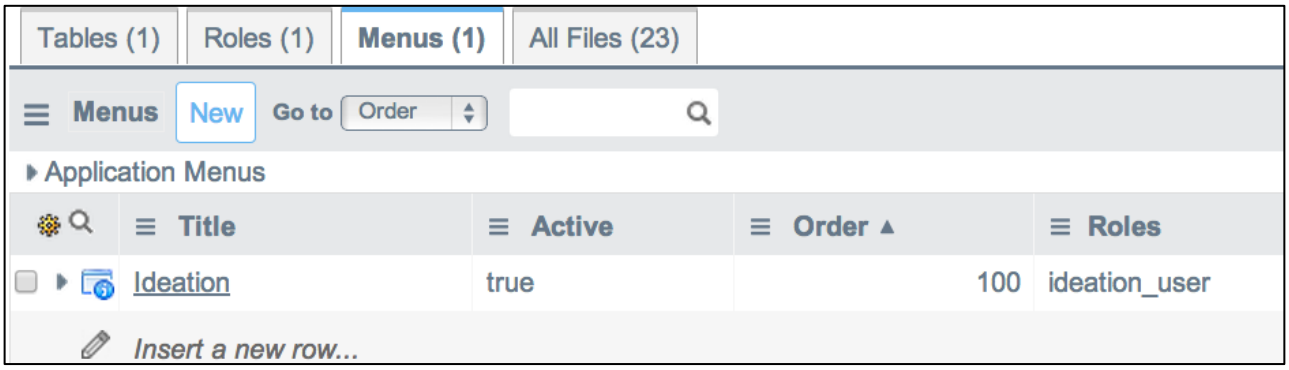
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Task 4 – Add Modules (Child instance)

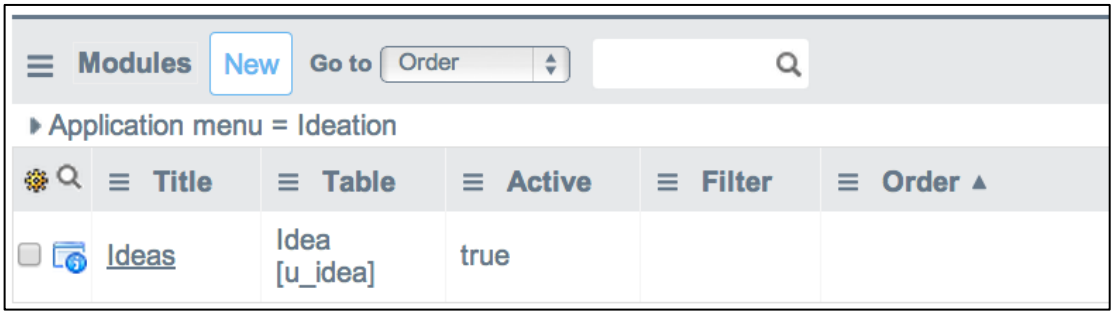
1. Navigate to your Ideation application form using the application picker.



2. In the related **Menus** list, click the **Ideation** menu to open it.



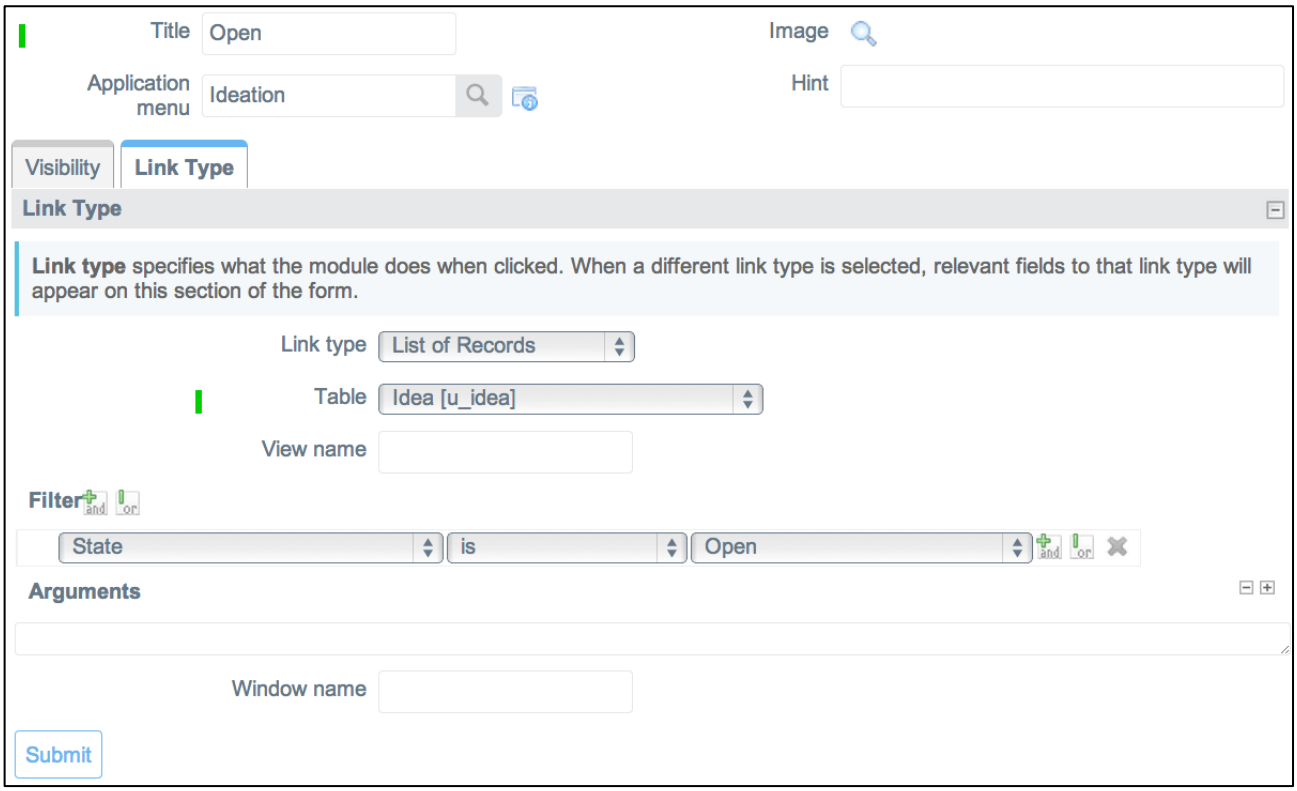
3. In the related **Modules** list click **New** to create a new menu module.



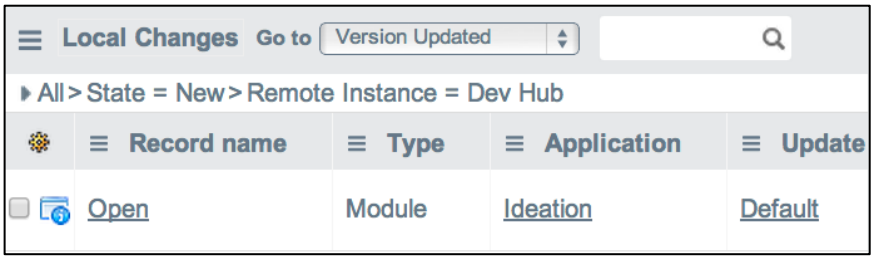
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4. Enter the following values and click **Submit**.

   Title: Open
   Link type: List of Records
   Table: Idea [u_idea]
   Filter: State > is > Open



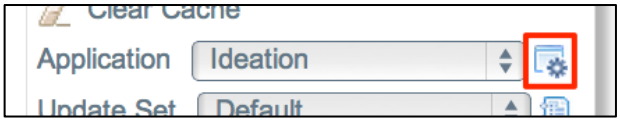
5. **Push** your **changes** as described above.



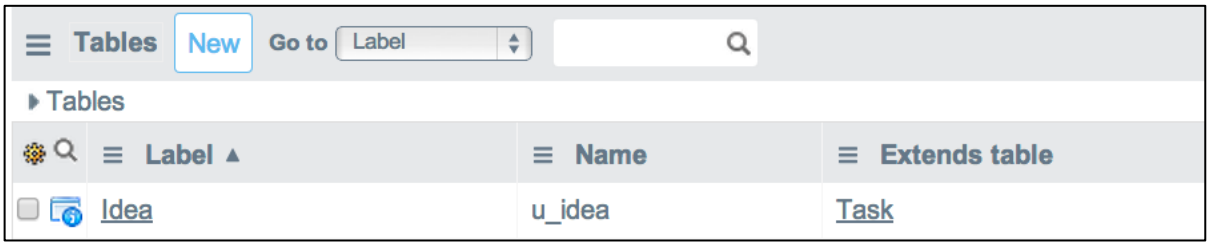
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Task 5 – Define Auto-number (Child instance)

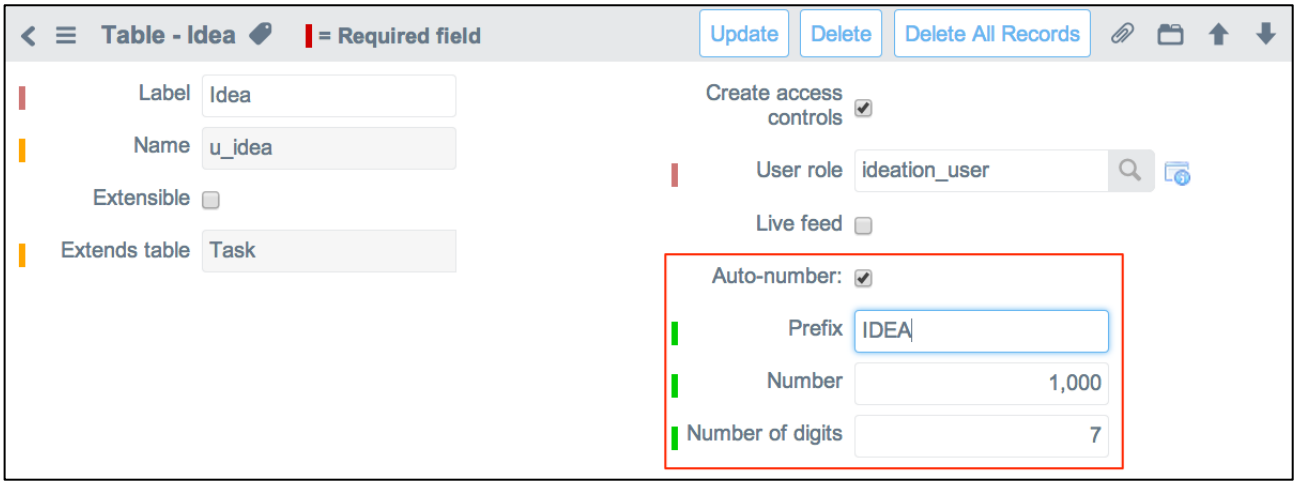
1. Navigate to your Ideation application form using the application picker.



2. In the related **Tables** list, click the **Idea** table to open it.

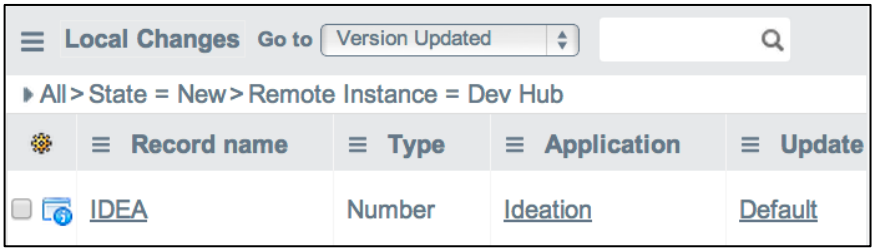


3. Click the **Auto-number** checkbox and enter IDEA for your **Prefix**.



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4. **Push** your **changes** as described above.



Lab Success Verification

- ✓ You learned how to track local changes and **queue them for a push**.
- ✓ You know how to **push changes** you have queued on your child instance with a single click.
- ✓ Your Ideation application is up to date and live across your parent and child instances.

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Lab Goal

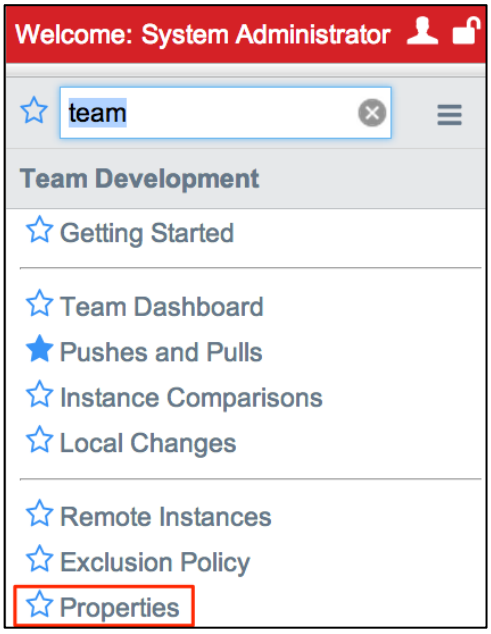
To add more protection from promoting unwanted changes it is possible to enable an approval workflow on your parent to support reviewing, approving and rejecting any push.

Lab 5
Code Review

Enable Code Review on Parent (Parent instance)

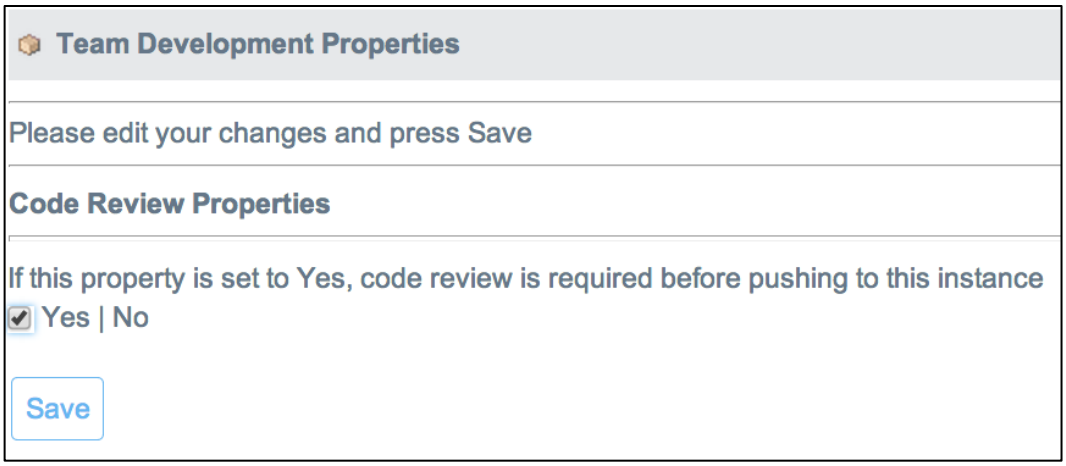
1. Log on to your **parent** Dev Hub instance.

2. Navigate to **Team Development > Properties**.



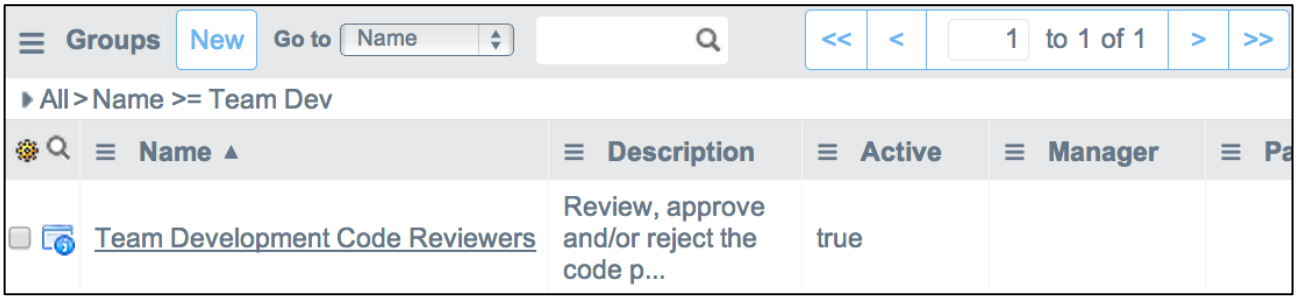
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3. Check the box to enable Code Review on this parent instance, and click Save. This will enforce that any push made to this parent be staged pending approval.



4. Navigate to **User Administration > Groups**.

5. Locate **the Team Development Code Reviewers** group by name and click to open it.



6. Ensure your desired user is a member of this group. The default code review workflow relies on this group to distribute approval requests for and notify you're approvers. (System Administrator is added by default.)

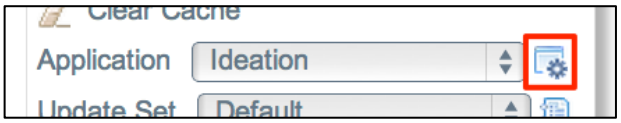
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Task 5 – Add Dictionary Override for State (Child instance)

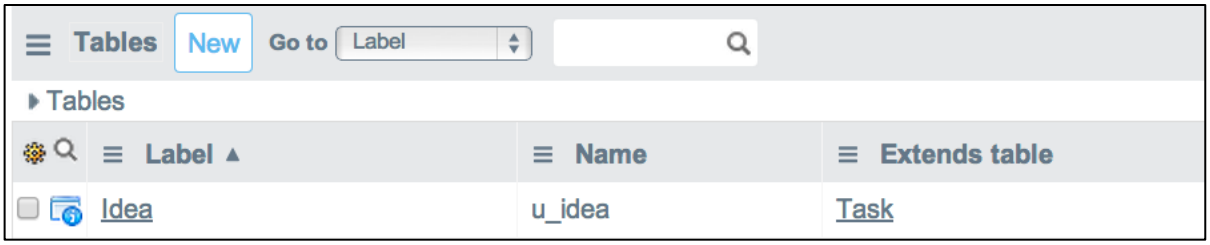
Now we will perform a final task, adding an override to Task's State field.

1. Log on to one of your team's **child** instances with admin credentials.

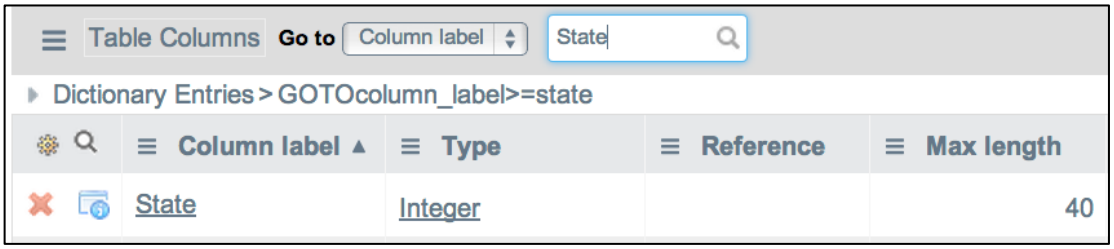
2. Navigate to your Ideation application form using the application picker, ensuring that the **Ideation** application is selected.



3. In the related **Tables** list, click the **Idea** table to open it.



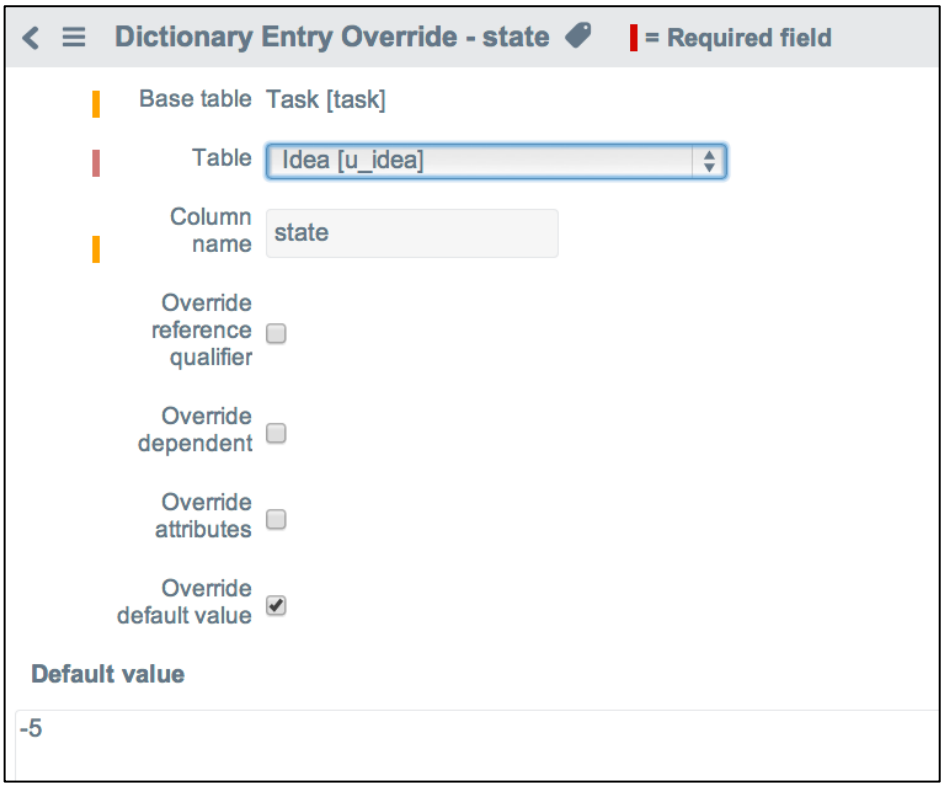
4. In the **Table Columns** list, filter for and open the **State** column.



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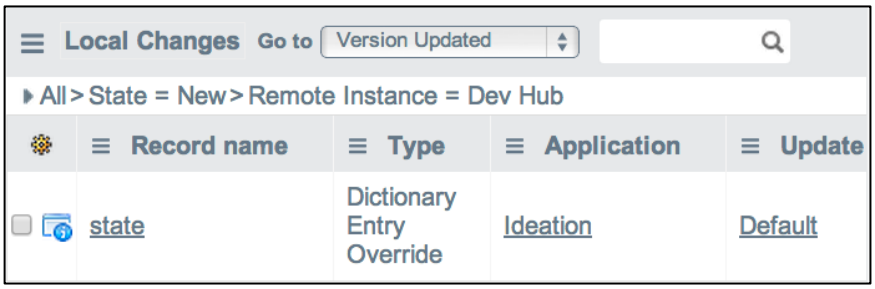
5. In the related **Dictionary Overrides** list, click **New** and enter the following values. This will ensure new Idea records default their state to **Pending** [-5] instead of **Open**.

   Table: Idea [u_idea]
   Override default value: ☑
   Default value: -5



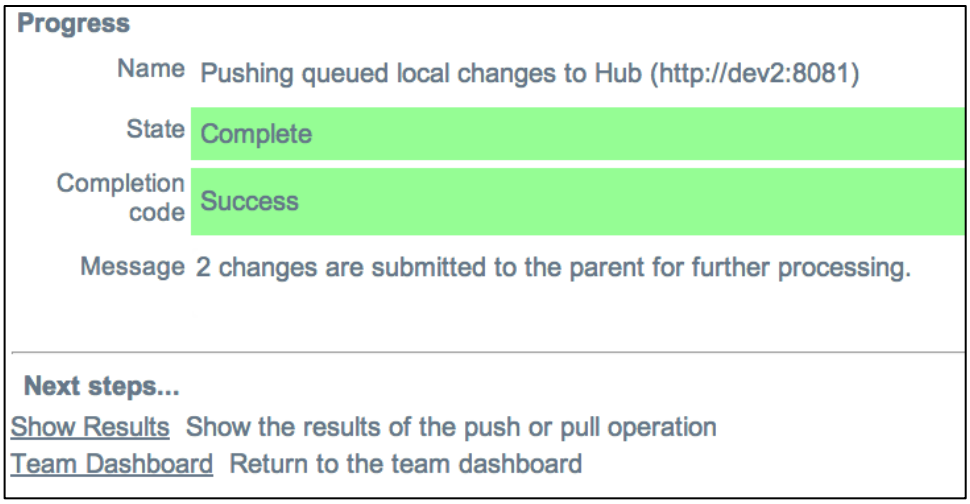
   Click **Submit**.

6. Push your changes as described in lab 4.



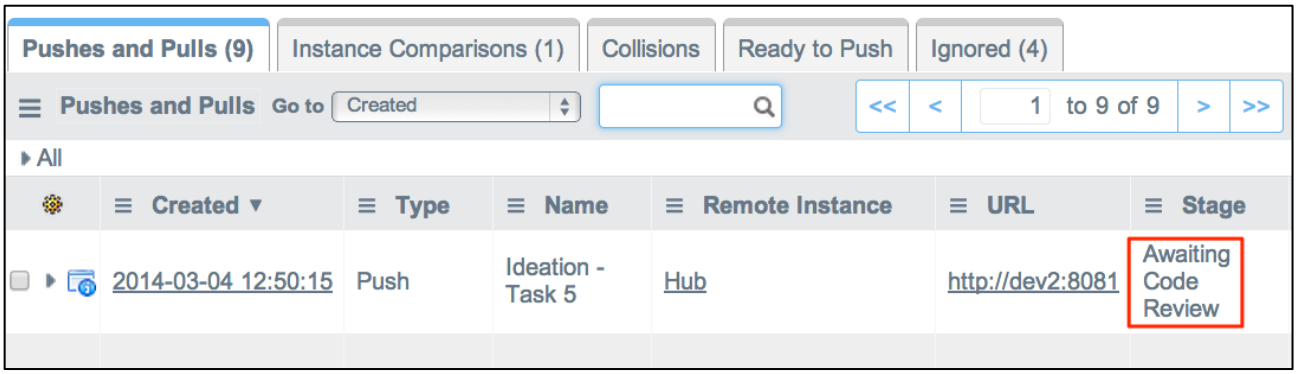
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7. With code review enabled on your parent, your progress worker status message will be slightly different:



Your pushed changes are now staged on the parent and will not be committed until someone approves them.

8. Return to the **Team Dashboard** and click the **Pushes and Pulls** tab. Your push history is listed with the stage *Awaiting Code Review*.

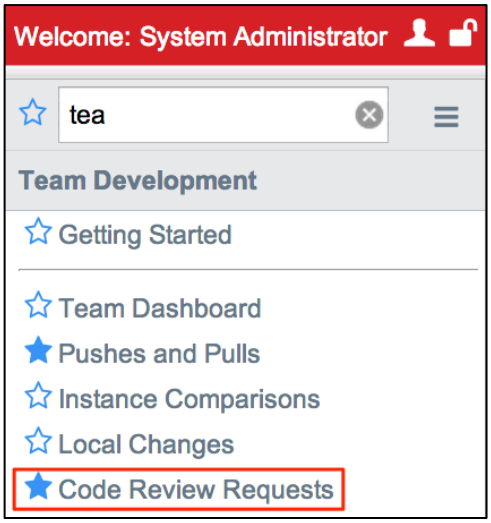


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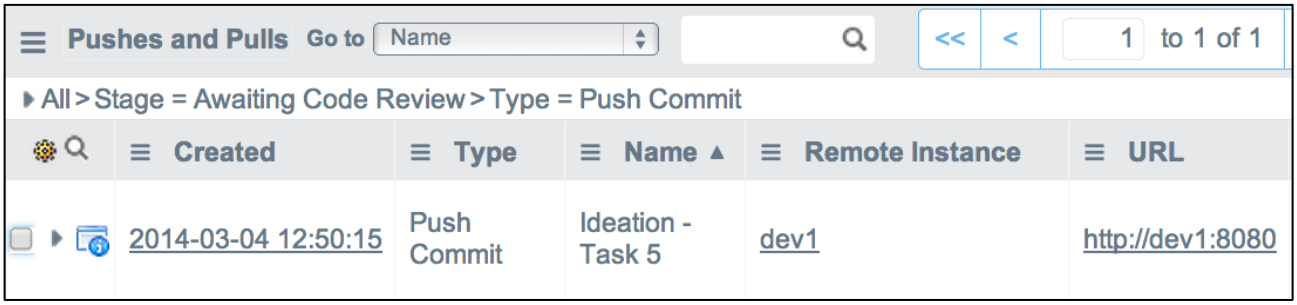
Review and Approve the Push (Parent instance)

1. Log on to your **parent** Dev Hub instance with admin credentials.

2. Navigate to **Team Development > Code Review Requests**.

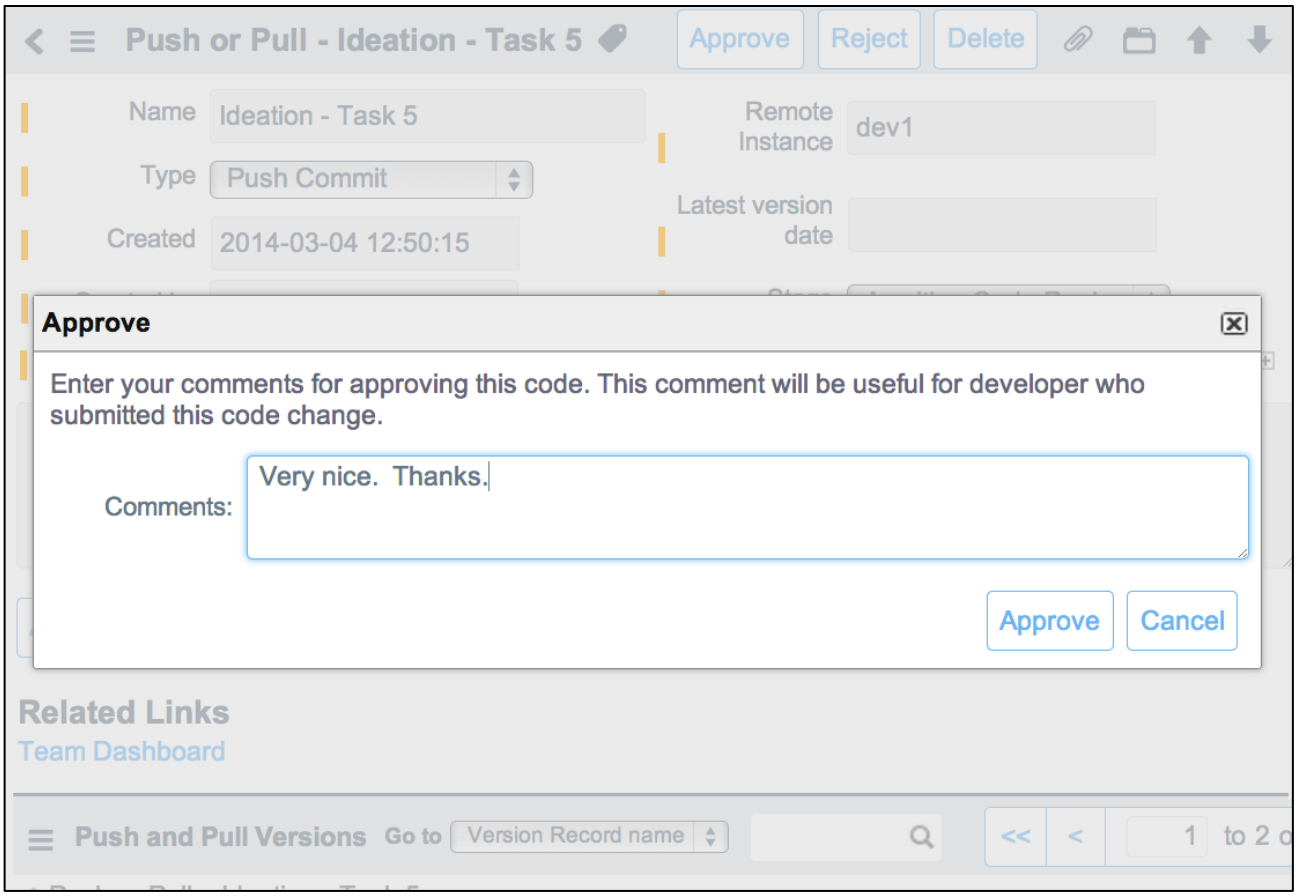


3. Open the push history record awaiting code review.



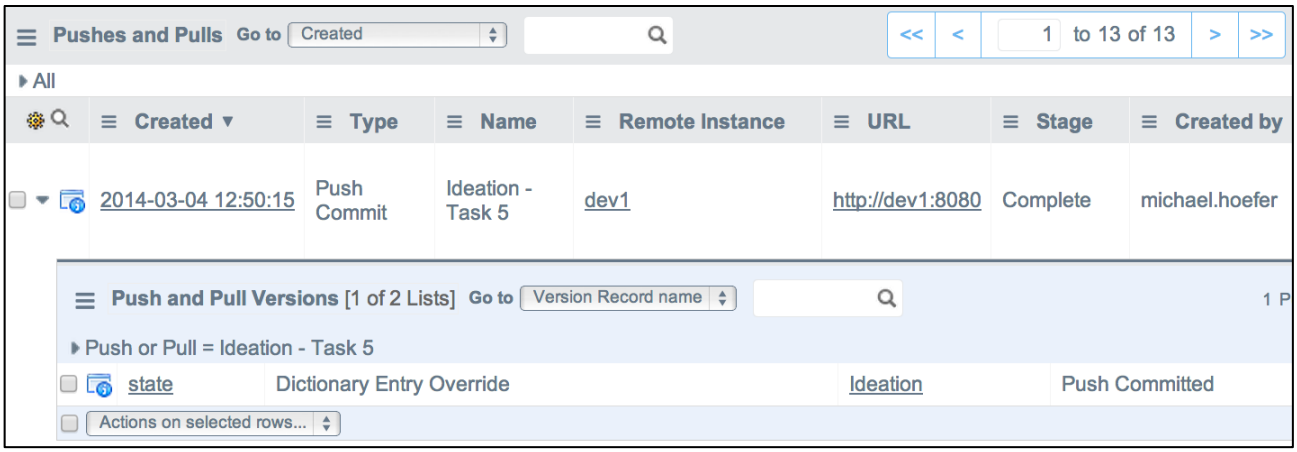
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4. Review the related changes as needed and click **Approve**. Enter an encouraging comment in the approval dialog and again click **Approve**.



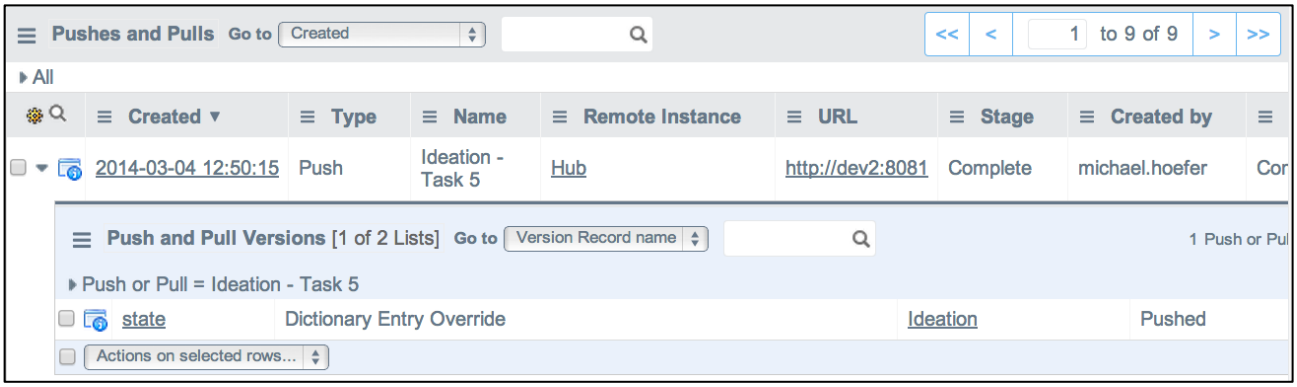
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5. Within **parent** instance, navigate to **Team Development > Pushes and Pulls** and locate your approved push by name or created date. Verify that the stage is now **Complete**.



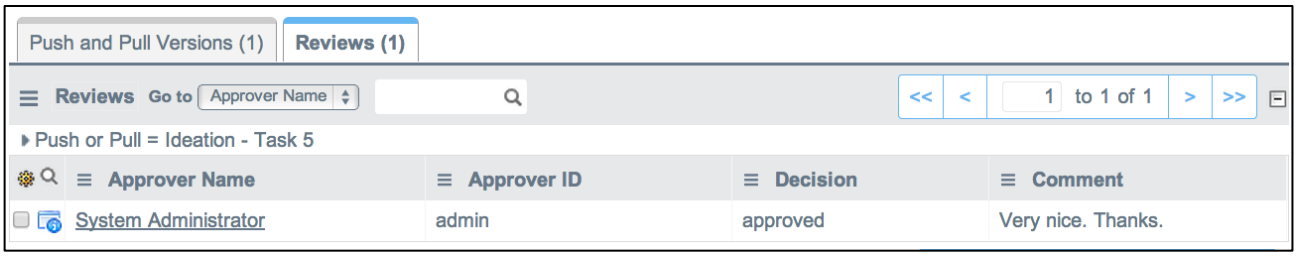
6. Navigate to **Ideation >** Ideas and click **New**. Verify that the **State** field is now set to Pending by default.

7. Log back on to your **child** instance from where you pushed your changes. Navigate to **Team Development > Pushes and Pulls** and locate your approved push by name or created date. Verify that the stage is also now listed as **Complete**, and thus synchronized with your parent.



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8. Open the record and view the Reviews related list to see any comments from the review process.



Lab Success Verification

- ✓ You configured your parent instance to enforce approval before committing a change set using Code Review.

- ✓ You implemented a change, pushed it to your parent and approved it before it was committed to the instance.

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Lab Goal

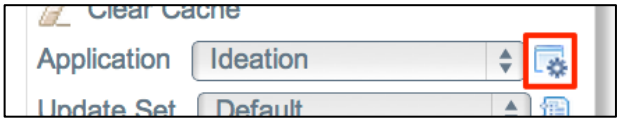
Team Development operates apart from Update Sets, but integrates with them in some useful ways. This lab covers how you can use local update sets to organize your local changes, and explains how update sets are generated during a push.

Lab 6 Update Sets in Team Dev

Create a Local Update Set (Child instance)

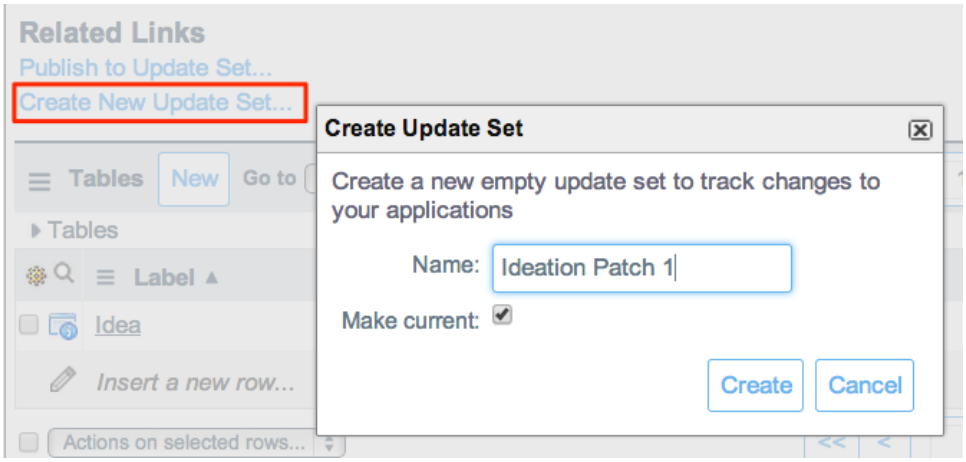
1. Log on to your **child** instance with admin credentials.

2. Navigate to your Ideation application form using the application picker, ensuring that the **Ideation** application is selected.



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3. Click the related link **Create New Update Set**, enter the name **Ideation Patch 1**, and click **Create**.



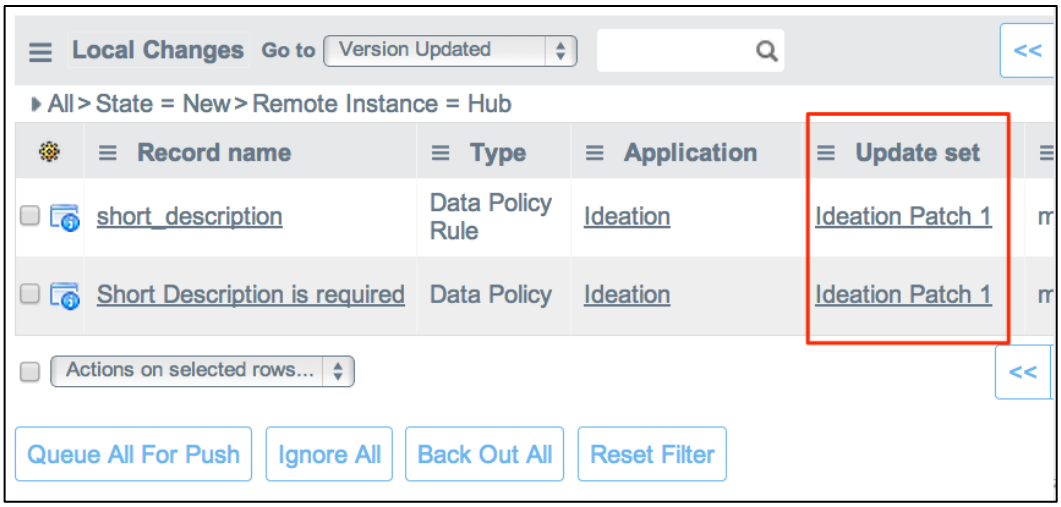
(Alternatively, navigate to **System Update Sets > Local Update Sets** and click **New**.)

4. Now, make your own change or addition to your application. Some ideas:

   *Add a new menu module in your app of type New Record called **Submit Idea**.*
   Add a Data Policy to make the field Short Description mandatory.
   *Add a UI Action on your Idea form called **Submit Another Idea** that opens a new Idea form.*

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5. When finished with your changes, navigate to **Team Development > Team Dashboard** and observe the **Local Changes** list.



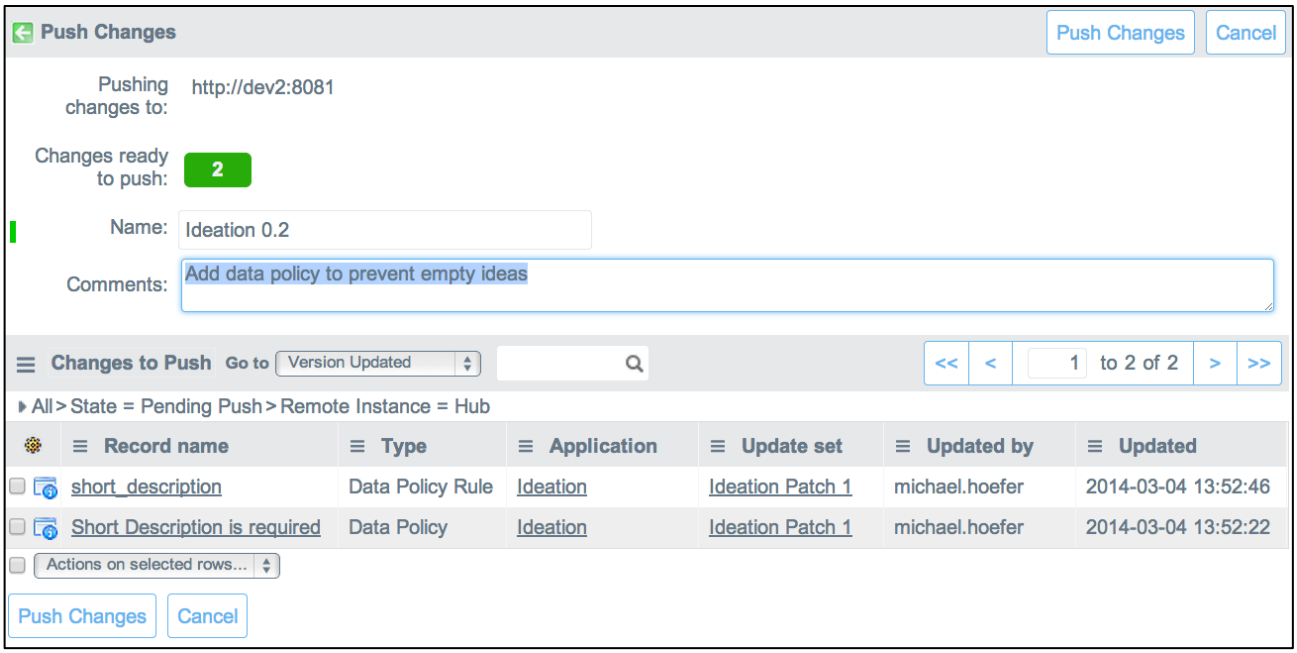
The column **Update set** displays the update set this particular local change is associated with. This is a standard reference field that you may use to sort and filter the list.

6. Right-click one of the cells in the **Update set** column referencing your update set, and click **Show Matching**. This will ensure only those updates associated with that update set are listed.

7. **Click Queue All For Push**.

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8. **Click Push** in the dashboard control panel. Enter the name **Ideation 0.2** with a comment **Add data policy to prevent empty ideas**.



Click **Push Changes**.

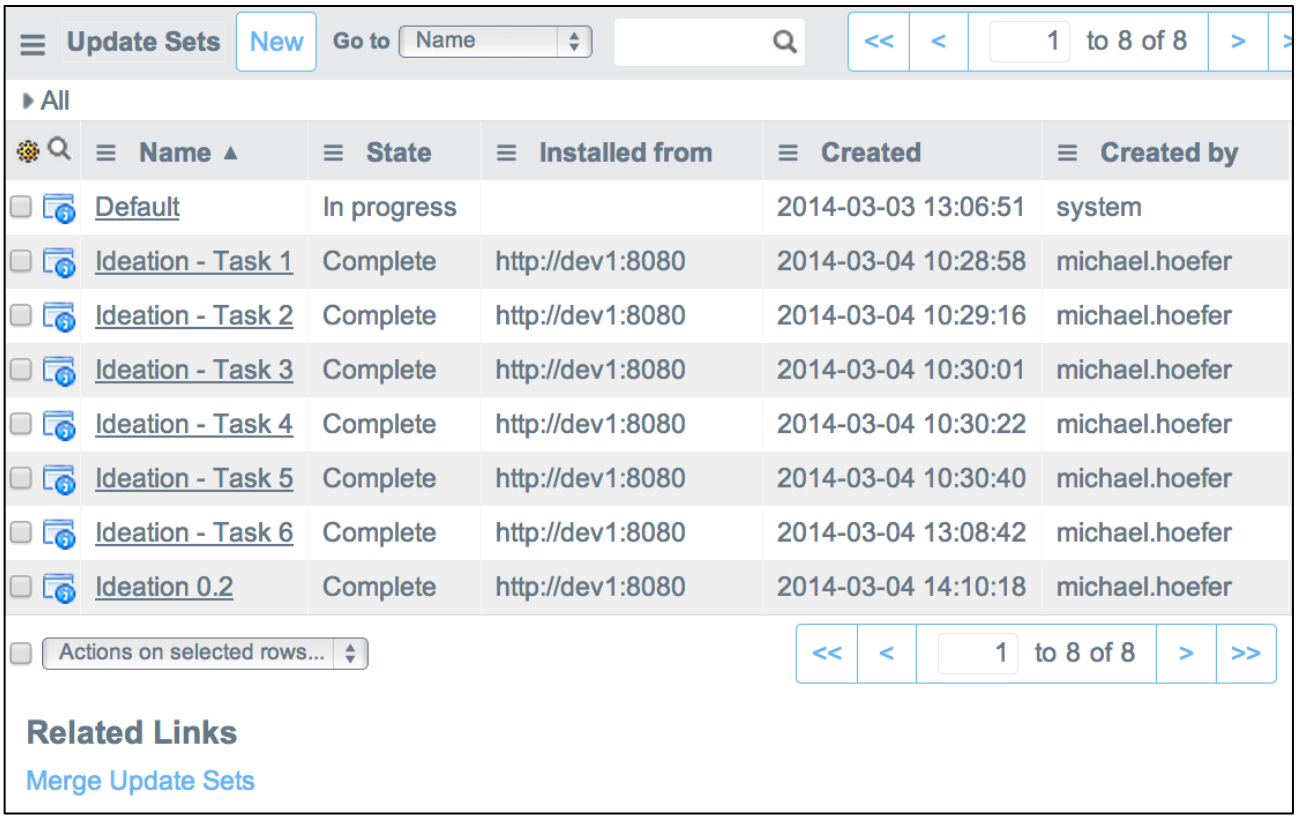
Approve Change and Merge Update Sets (Parent instance)

1. Log on to your **parent** Dev Hub instance with admin credentials.

2. Navigate to **Team Development > Code Review Requests** and approve the pending push, as shown above.

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3. Navigate to **System Update Sets > Local Update Sets**. Here you will see one update set for each push your team has made to your parent in this lab.



Always use well-structured names for your pushes, just as you should when creating update sets. The name coupled with good comments will help anyone looking at either Push and Pull History or Update Set records understand what you were thinking at the time. You will also have a much better shot at your change set being approved.

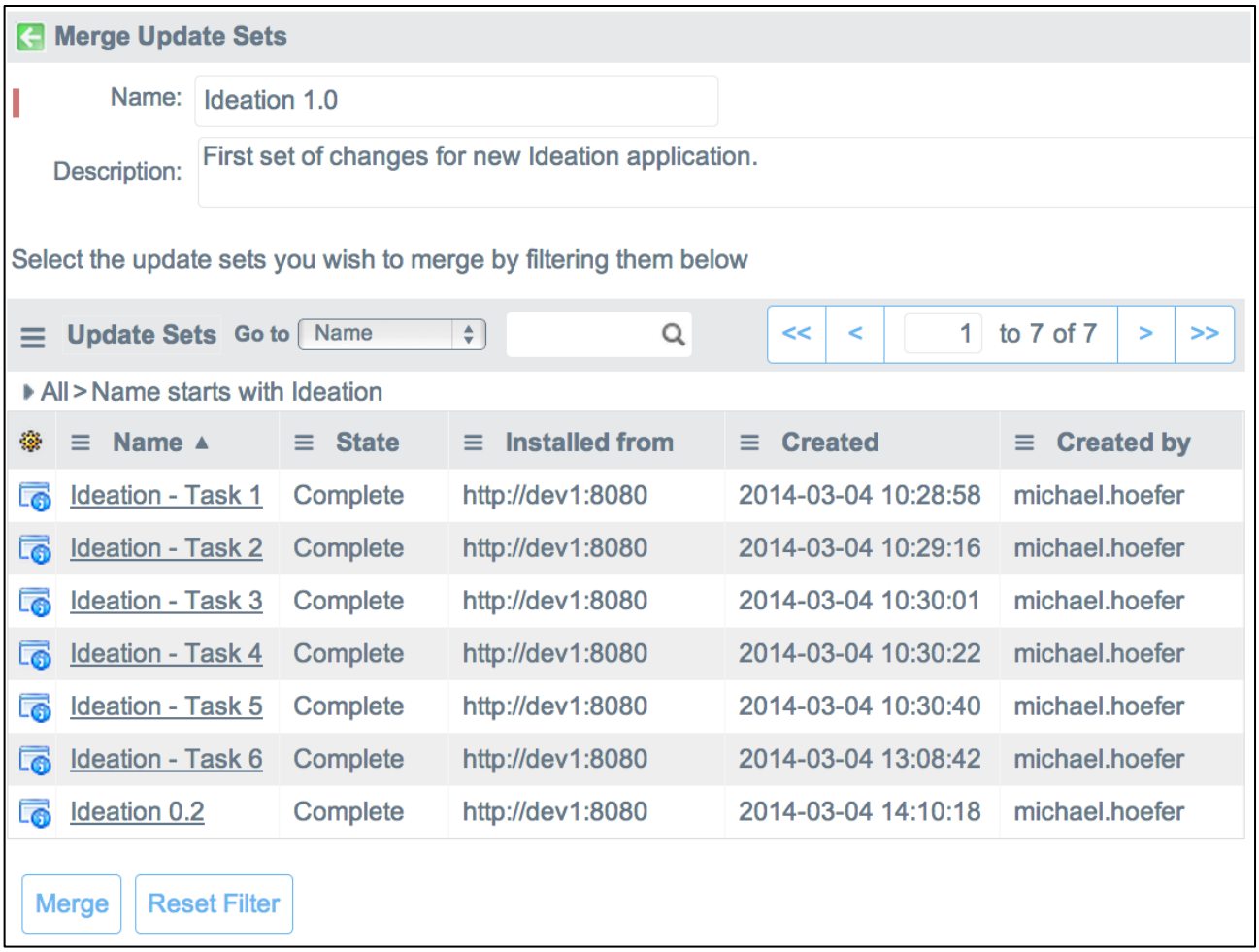
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4. At this level you no longer want to track such small change sets, but rather want to consolidate them into larger set. Click **Merge Update Sets** to do so.



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5. Enter a suitable **Name** and **Description** for the new update set, and filter the **Update Sets** list to only include update set records where **Name > Starts With > Ideation**.



6. Click **Merge**. When prompted to confirm, click **OK**. Your new update set **Ideation 1.0** now contains all of the updates from the original update sets.

7. Your original update sets should now be marked as **State** is Ignore and be empty. Navigate to **System Update Sets > Local Update Sets**.

8. Select all update sets where **State** is Ignore and click **Delete** from the list choice menu.

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Lab Success Verification

- ✓ You used a local update set to keep your changes to your application organized.
- ✓ You learned that the system creates a completed update set on the parent instance for every change set pushed and committed, and understand the importance of good naming when creating update sets and pushing changes in Team Development.
- ✓ You merged the completed update sets from all of your pushes made to your Ideation application into a single new update set. This allows you to consolidate related changes into one larger set that is easier to track and migrate.

We Thank You For Playing

Those are the key components of Team Development in ServiceNow. We are building on these foundations and are ever striving to simplify the complicated world of code and customization management on our platform in the cloud.

We hope you enjoyed your time here, hope you learned more than you forgot, and hope you feel free to ask questions of any of us today or throughout the conference. Enjoy and cheers,

- Mike and Tulio

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