Authoring Templates

TopicalApps

Every topic starts by referencing a template. Templates define the data structure, logic, and workflow behind topics. Each template is a small software application and authoring a template is writing software, which requires structured thinking. That said, we've made authoring easy, so you spend more time focused on achieving your goals and less time focused on technical details.

This document introduces you to template authoring and its many options. Please familiarize yourself with it early, then refer to it later, as needed.

This document covers:

Also

- This document refers to the 'TopicalApps Primary Administrator'. This is the person in your organization who governs the structures and policies of your TopicalApps instance. If you don't know who this person is, please find out.

- If you haven't read our TopicalApps Platform Capabilities document, please do. It will add some broader context. You can find it on www.topicalapps.com, Platform section.

Naming Conventions

Following naming conventions helps you be clear and project professionalism. It's good practice to follow naming conventions for everything (template titles and codes, field names, workflow state names, list values, et cetera).

We discuss naming conventions in more detail in our system setup documentation. If you don't know your organization's naming conventions, please contact your TopicalApps Primary Administrator.

Iterative Authoring

Authoring a template is writing software. You start with a goal in mind, use your creativity and the tools available, then try, modify, try, modify, try, et cetera. You're done when the template is ready to accomplish its goal. It's how all software is written, and the best software is written through rapid iteration. Here's the process:

1. Press Create a New Template from your home screen. You'll arrive at the template authoring screen.
2. Complete the identifying information (the fields on top) and press Save. Once saved, you can leave and come back any time.
3. Add some content and press Preview.
4. You'll see your template in working form. Try it.
5. Press ‹ to return to the authoring screen.
6. Add more content, workflow and rules. Save, try, repeat.
7. When you think your template is done, perform pre-release testing. See more in the Pre-Release Testing section.
8. After pre-release testing is successful, set the Status to "Active" and press Save. Your template is ready for use.

The remaining sections of this document add detail to the steps above.

Template Identification

When you create a template, you'll start by assigning it some identifying information:

- **Title** – Enter a short, recognizable purpose for the template
- **Code** – Enter a unique value, typically a few characters in length. After your initial save, this value becomes on-modifiable (though you can copy the template, change the code, and delete the original if you make a mistake).
- **Category** – Select from the categories your TopicalApps Primary Administrator created. Template categories are helpful when searching and reporting. They should also reinforce purpose. If the template you're about to create doesn't easily fall into one of the categories you see, please contact your TopicalApps Primary Administrator.
- **Organization** – Select from the organizations you have access to. We use a template's organization to determine both who can edit it and who can use it. Like almost everything else in TopicalApps, templates are data and data access can be one of our more complex subjects, so we created a special section for it (Who Can Access What Data and When). To start though, simply accept the defaulted organization and come back to it later (minimally, during pre-release testing).

Eventually, you'll set some additional identifying information:

- **Status** – Status determines if this template is ready for use.
- **Revision** – Revision is an auto-incrementing number. Code + Revision is the unique identifier for this template.

  See more in the Statuses, Revisions, and Changes section.

Content and Data Structure

Content consists of contextual elements to help users through a process and input elements (fields) for users to capture information. Add and arrange as much content to your template as you need.

To start, let's talk about capturing user input. Your early decisions on how to capture user input will drive many subsequent content decisions.

There are three ways users can capture input:

1. Users can annotate a PDF (or image) form that you upload to your template. It's like completing a paper form with a pen, only electronically with your finger, stylus, or mouse. You don't get reportable data or enforceable logic, but you do get workflow, quantitative reporting, and the benefits of reduced paper. It's the fastest way to create a template. You simply add an authoring element called 'Form' and upload your PDF (or image).

2. Users can complete data fields that you overlay onto a PDF (or image) form that upload to your template. Users complete real data fields while the background PDF (or image) provides context. This takes a bit longer to build than #1 above but you get the benefits of reportable data and enforceable logic. You add an authoring element called 'Form', upload your PDF (or image), then add, size, and position data fields of various types (character, date, number, et cetera).

3. Users can complete data fields that you build into an html structure. You build the html structure from scratch using our various authoring elements. While this can take longer than #1 or #2 above it provides the most reportable data and enforceable logic. You can build anything from a simple data entry form to a large, complex, smart-branching procedure.

The methods described above are not mutually exclusive; you can use them together in the same template.

While your template is in 'Authoring' status, you'll see a menu of Authoring Elements on the left side of the screen. There are two ways to create content from authoring elements:

A. Press, hold, and drag an element name on the left side of the screen then drop it on a bullseye ◎ on the right side of the screen. The element will appear immediately below the bullseye where you dropped it.

B. Press the arrow ↦ to the right of an authoring element. This will place the element at the bottom of the content list on the right side of the screen.

When you add an element and see Details next to it, there are more options available. Press Details to navigate to the details section. When your element requires input in the details section, we let you know and won't let you save or preview until you add the necessary details.

The Details section contains these attributes that are common across many element types:

- **Header Region** – For the most part, we automatically arrange content elements from top to bottom on the user's screen. This is our standard approach because it lets us a create a readable screen for all device types and sizes. However, there are cases where a horizontally portioned screen has appeal. For elements where we offer this, you choose to between:
  - Standard (default value)
  - Left Side
  - Right Side

  The last two choices above place your element on the left or right side of the screen. See Settings for defining the width of horizontally portioned regions.

- **Prompt Placement** – For small screens, we automatically place field prompts to make best use of space but for larger screens you decide. You choose to between:
  - On Left (default value)
  - On Top
  - Hide Prompt

- **Prompt Width** – For prompts placed to the left on an entry field, you may set the prompt width to avoid wrapping or break where you want it to. Default value = 150px.

- **Identifying Field** – When you view a list of topics, it's nice see clues about what a topic contains without needing to open it. Identifying fields, are these clues. When you set this attribute to 'Yes', we include a portion of this elements value when we present topic lists. You choose to between:
  - No (default value)
  - Yes

Again, the attributes above apply to many but not all elements; when they don't apply, we don't show them.

Many elements also have element-specific attributes which we describe, a bit later, when we outline element types.

After you add an element and complete its details, you can copy the element and to reuse its details. This can be very helpful when you have multiple similar, complex elements (like tables). For elements you can copy you'll see a "C" to the left 

; press the "C" to copy it. We add copied elements to the bottom of the content list.

There are two ways to reorder content elements after you add them:

A. Press, hold, and drag the up/down arrow  next to the content element you want to move. Drop it on a bullseye and the element will appear immediately below the bullseye where you dropped it.

B. Press the up arrow  to move the element up.

Authoring Elements come in three categories:

1. **Informational Elements** provide context and guidance. They come in these varieties:
    - **Section Header –** bold white text against a grey background to provide visual breaks

    - **Text blocks –** body text provides context and is available in multiple styles:
        - Normal Text
        - Bold Text
        - Highlighted Text
        - Bulleted Text

    - **Image –** png, gif, or jpeg images you embed for obvious context. Images can help users know what you want. Users can also annotate these images to add value as they process a topic.

    - **Reference Docs –** links to pdf, png, gif, or jpeg attachments. The 'Reference Docs' element provides similar value to the 'Image' element but is less visually obtrusive. Users must press a reference document name to open it and users cannot annotate them.

    - **Supplement Link –** link to a supplemental section of the template. This element provides quick navigation.

    - **Embedded Notification –** text intended to deliver a clear message while the user is working and comes in these varieties:
        - Caution
        - Warning
        - Note
        - Instruction (Note: we do not print instruction elements)

    - **Open URL –** link to an external website or document. This shows up as a button on the user's screen.

- Enter button text in the elements screen.
- Press 'Details' to:
    - Enter a fully formed url (e.g., https://mysite.com) in the URL field.
    - Select 'Export Token' in the URL Parameter Field if you want us to generate and append an export token to the url as a parameter; the launched url will look like https://mysite.com?0.34959015722991826 and we post the token to the topic's database record.

2. **Structural Elements** group related elements into blocks.
    - **Step –** You use the Step element when building a smart procedure. You may place other elements inside a step, which then act as unit (i.e., to complete a step, the user must complete the other elements inside the step). To add an element to a step, place the element beneath the step. All elements beneath a step belong to that step until we come to a new step (or supplement).

      Steps may contain other steps (sub-steps) up to 5 levels deep. When you change the depth, we automatically change the step prefix:

Depth	Example step prefix
1	1.0
2	1.1
3	1.1.1
4	1.1.1.1
5	1.1.1.1.1
3A	1.1.a
4A	1.1.1.a
5A	1.1.1.1.a

      As you add steps, we increment the prefix (1.0, 2.0, 3.0, et cetera) (1.1.a, 1.1.b. 1.1.c, et cetera).

When you reorder steps and sub-steps (see reordering content above) their content moves as a unit, and we automatically update all affected prefixes.

Normal flow through smart procedure steps is sequential, but you may add logic to guide users through steps with logical branching. See Smart Branching.

You configure each step with one of four step types:

- **Action:** This is default value and indicates a step with normal behavior. The user must complete all fields within the step before completing it.

- **Action Allow N/A:** You may have steps that are not applicable under some circumstances and, rather than use branching logic, you simply want the user to decide if the fields within it need completing. Here we present an N/A (not applicable) checkbox. If the user checks it, she may complete the step without completing the fields within it.

- **Action Allow Out Of Sequence:** Normally, we force users to complete procedure step sequentially. However, you may have cases where you permit users to suspend the normal path and jump ahead. You use this step type for the steps that you permit users to jump ahead to. After jumping ahead, the user must eventually go back and complete the full procedure.

- **No Action:** Use this step type for steps that require no user action but serve a place in your procedure outline.

Suspending and Reopening steps.

- **Suspend:** When a user starts a step, we set that step to the "working" state. She may suspend the step by pressing the [Suspend] button. This serves two purposes:

1. It stops the step-duration clock. We track the working duration of each step, so if a user stops work for any reason, suspending the "working" step stops the duration clock.
2. When you permit out of sequence steps, the user must suspend the "working" step before starting a new one. We only permit one step at a time to be in a "working" state.

- **Reopen:** After completing a step, a user may reopen it by pressing the [Reopen] button. The user then must start anew from the point at which she reopened the procedure, except in one case: where you permit out-of-sequence steps, any step that a user started before initially completing the step she reopened remains in its current state. We keep any audit trail of all changes, so you can retrace activity.

- **Supplement –** You use the Supplement element to add one or more sections to the end of a template (supplements can be appendices or other information blocks for conditional use). You may add any other elements to a supplement except steps (We only support steps in the body of a template. If you need steps in a supplement, use a Child Topic – see Child Topics below).

  For quick navigation from the template body to a Supplement, use a Supplement Link as described the Informational Elements section above.

3. **Data Capture Elements** ask for user input.
   - **Small Text –** Single-line text up to 125 characters. In addition to typing and voice conversion in all platforms, users may populate small text fields using a barcode reader in our Mobile App.

   - **Large Text –** Multi-line text up to 2000 characters

- **Checkbox –** Single press yes/no value. Pressing a checkbox toggles the current value.

- **Date –** A date field (day, month, year in the format set by your TopicalApps Primary Administrator. We support multi-national date formats)

- **Date/Time –** A date field (in your format of choice, see above) plus a time field (hh:mm)

- **List of Values –** A discrete list of values you provide. You may:
  - render the list as a dropdown or as radio buttons
  - assign a quantitative amount to each value and use these in calculations
  - show an explanation field so users can explain their choice
  - require an explanation for some choices

  You may use list values to drive smart-procedure-branching, numeric calculations, and workflow logic.

- **Reference Data –** Permits the user to search for and select:
  - a system user, or
  - a system team, or
  - data someone has created in another topic. For example, you may have created a 'Physical Buildings' template (building name, address, capacity, et cetera) and then created a corresponding topic for each building on your campus (specific name, specific address, et cetera). The user may 'reference' one of the 'Physical Building' topics and pull information from it into the template he's processing. If your physical buildings have barcodes, users may populate the reference data values in our Mobile App using a barcode reader.

After adding a 'Reference Data' element, press Details to select the reference data source and define other behaviors.

As mentioned above, a reference data source can be a template. Templates are available for your selection when:

1. You have organizational access to that template, and
2. That template is marked as "Available as Reference Data" in Settings.

You may restrict Reference Data element values by other Reference Data element values. Following our example above, you may have a template that defines 'Physical Building Rooms'. When you define a room, you select the building it belongs to. Now when you use 'Physical Buildings' and 'Physical Building Rooms' in your "Accident Report" template, you may restrict rooms by buildings. If you do so, a user completing an accident report will need so select a building before selecting a room then, on doing so, will only be able to select a room that belongs to the previously selected building.

- **Numeric –** A numeric field. You define the number of decimal places and unit of measure. You may use numeric field values in calculations, smart-procedure-branching, and workflow logic.

- **Signature –** Permits to the user to hand write her signature and optionally to type her name.

- **Table –** Tables let users create or complete many similar instances of information. Each table has many behavior options and may contain up to 10 columns. Each column may be any of these data types: checkbox, character, numeric, list of values, reference data, date, time, or image.

When you define a table, you may add and populate default rows (fully or partially). Many procedures contain fully or partially populated tables. You use default rows to fill this need.

- **Form –** A form is a PDF or image you upload to serve as background context. To complete a form, users may annotate it or complete real data fields that you overlay. You may use overlay field values in logic and reporting just as you use the other data capture elements defined above.

  To upload a PDF or image, press Details then press Load a File.

  To add an overlay field, press  then press the location on the form where you want to place the overlay field. You'll get a popup screen where you select a presentation type and then add additional information based on the presentation type you select.

  Presentation types: small text, large text, list of values, radio button, reference data, date, time, number, checkbox, signature, image, Open URL, and table fill.

  Regardless of presentation type, every overlay field requires a name. Field names are important because users will see them when searching and reporting. Naming conventions will help here. Every field name must be unique.

  Press ‹ and you'll see your new overlay field. Chances are it's not exactly where you want it to be. You have two choices for repositioning:

  - Press  then press, hold, and drag your field.
  - With  selected (you can tell it's selected when it has a blue border), press the field you want to move, and you'll get a popup screen. Manually change the Field Top(px) or Field Left (px) values. This is a good way to fine-tune field placement.

To remove a field, press ⊗ then press the field you want to remove (it will show a red dashed border) then ⊗ press again.

With  selected, press any existing field to edit it.

With  selected, add as many new fields as you'd like (Note: you can't add a new field on top an existing field; if you try, we'll think your attempting to edit the existing field).

Most presentation types are straight forward but these exceptions are worth a little explanation:

- **Open URL** opens the URL you specify in Field Name. Make it a fully formed URL (e.g., 'https://www.google.com'). When a user presses it, we open the URL in a separate browser window. This is a good way to integrate supporting documents with your forms but since they open live URLs, they don't work when a user is offline.

- **Image** lets a user add an image to the body of the form. This can be useful, for example, if you want the user to take a specific picture as part of completing the process. Using rules, you can make the image required for process completion.

- **Radio Button** lets you create a "Yes/No" field that looks and acts like a standard radio button. To create multiple, mutually exclusive radio buttons, name them with this convention: "GroupName.InstanceName". GroupNames and InstanceName can be whatever you want them to be.

  For example, you could create three radio buttons with field names Size.Large, Size.Medium, Size.Small (note: they share a GroupName). When a user presses one of them, we set that one to "Yes" and set all others in the group to "No".

- **Table Fill** lets you associate cells in a table with points on a map or diagram. Let's say your Form contains a floorplan diagram and you want the user to measure air temperature at several locations on the floor plan. Table Fill overlay fields make measurement locations visible on the diagram and use color to indicate measurement status.

1. Add your Form element, press Details and upload your form but don't add any overlay fields yet. Press ‹

2. Add a Table element (see Table element above), name it something like 'Temperatures By Location', press Details and populate it with columns and default rows to look like this. Press ‹

Location	Location Description	Temperature
A	Northwest corner, room 112	
B	Stairwell 3	
C	Bathroom 6	

Note: this Table must be beneath the Form which is why we added the Form first (though we could have changed the order later too).

3. Open your Form (press Details) and add an overlay field at location A, Presentation Type = "Table Fill", Field Name = "A", Table To Fill = "Temperatures By Location", Identifying Column = "1" (notice that the overlay field name has a matching instance in column 1 of the table; this is how we match table-row to overlay-field). Add similar overlay fields for B and C. Press ‹

Press Preview to try it. When a user presses "A "on the diagram, we popup the single table row that matches "A".

The user enters the temperature value and close the popup. "A" turns green on the diagram indicating that it's done. We could have also put acceptable-temperature-range columns (min/max) in the table; if the value of "A" was outside the acceptable range, "A" would turn red on the diagram, indicating completion but with an unacceptable value.

- **Add Images –** Lets users add images, such as photographs, to the body of a topic to document their findings. They may also annotate the images to add further value. Users may directly add images with their device cameras when using our Mobile App.

- **Add PDF –** Lets users upload one PDF document and annotate it. You might use this approach as a catch-all template. Rather than defining a form ahead of time, users choose whatever PDF form they need when they need it. This approach doesn't yield reportable data or enforceable logic, but it can reap the benefits of workflow, quantitative reporting, and paper reduction.

- **Add Ref Docs –** Lets users upload PDFs and images to document their findings. This element adds similar value to the Add Images element but is less visually intrusive and doesn't permit annotation. Also, print and archive list the names of these documents but does not reproduce the content.

- **Add Child Topics –** Lets users add topics within a topic. Let's say you have a template for reporting incidents and another template for processing corrective actions. You'd use this element to let users create corrective actions for specific incident reports. In this example, you can also default certain values from the incident report (parent) into a newly created corrective actions (children). To define these defaults, first select the target child-topic template, then press 

and follow the directions. You may default parent

values into these child element types: Small Text, Large Text, Date, Time, Checkbox, Reference, and Number (with these exceptions – you may not default from or into table cells; you may not default into elements within procedure steps; you may not default from or into form fields).

There are many other use cases for child topics, including Electronic Work Packages (EWPs). EWPs bundle multiple child topics (e.g., work procedures), supporting documents, and other elements into a single unit of work. To make a template act as an EWP, "Add Child Topics" has a parameter called "Package Children with their Parent":

- When you set "Package Children with their Parent" to "Yes", children act as if they are part of their parent (as opposed to independent topics that simply have a parent); as such children automatically get assigned to a "Holding Tank" across the workflow with no due date (regardless of what the child assignment rules dictate).
    1. Because children are assigned to a "Holding Tank", they do NOT show up individually on user home screens
    2. Users edit and advance these children by navigating from the parent ('the package') to the children
    3. However, users with the with the right roles may reassign any open child to a named user or team. This permits multiple persons or teams to simultaneously work on different parts of the same package when offline. One person may 'checkout' the parent (the package) for offline use and other persons may 'checkout' specific children.

Settings let you govern the "closure" relationship between parent and child topics. You can prevent users from closing parents until all children are closed or cancelled (or permit parent closure while children remain open).

There's lots of details behind content elements and we probably didn't do a great job of explaining it all. Often the best way to discover what a content element can do is simply to try it. Add the element then press Preview.

Workflow

Press the Workflow tab and add as many Workflow States to your template as you need. The Sequence value defines the order in which workflow progresses.

You also indicate which, if any users, you want to notify via email as workflow states change.

You use Logic to define:

- Workflow assignee and due date for each workflow state (if you don't define these in logic for a given workflow state, we ask the assignee of the current workflow to set them for the next workflow state)
- The conditions under which we skip workflow states
- Required and non-modifiable Data Capture Elements by workflow state
- Required and non-modifiable smart procedure steps by workflow state
- When to offer or require workflow state completion comments

Logic (Rules)

You may add as many rules to your template as you need. To add a rule, press the Rules tab then Press Add a Rule and we add a new row to the rules grid.

The first column contains an Order value; rules run in sequence by Order. You may change rule order at any time by manually changing order values. Press Reorder Rules to sort them by the order you specify and add some space between values.

The second column contains the rule target. Rule targets can be workflow states, content elements (standard fields), form overlay fields (form fields), table columns, or temporary numbers (which we use in complex numeric calculations). When you press the Rules tab, we automatically populate a list of potential rule targets. Press the dropdown list in the second column, select a rule target, then

press Define to complete the rule. If you don't see the target you're looking for, press Save then press the Rules tab again.

The term "rule target" can be a little misleading as sometimes the target is the recipient of a value generated by a rule (e.g., for numeric calculations, the target receives the calculated value) and sometimes the target is the source of a key value (e.g., for required fields, workflow state is the source used to determine if a field is required). Using the term ambiguously helps us write rules efficiently (it's much easier to write one rule per workflow state when defining required field conditions than it is to write a different rule for each field). Anyway, it's easy to figure what's going, so long as you don't take the term "Target" too literally.

Rules trigger when a user takes almost any onscreen action. Depending on the action, we decide which rules to run.

You may use rules to:

- **Make Screen Content Elements required, non-modifiable, or invisible by Workflow State** – In the 'Target Field or Workflow State' column, select a workflow state. Then press Define and select 'Field Controls' in the Operation fields.

  In the "Apply When" field, select one of three values:

  1) **During This Workflow State** (this is the default value) – Controls apply while a topic is in the rule-target workflow state.
  2) **During This Workflow State AND After** – Controls apply while a topic is in the rule-target workflow state and in all subsequent workflow states.
  3) **Before This Workflow State** – Controls apply to topic workflow states that occur before the rule-target workflow state.

  On the right side of the screen you'll see your Screen Content Elements in a list. Select a value ('Required', 'Non-Modifiable', 'Invisible', et cetera) in the 'Control' column for each element you want to control with this rule. We only present the appropriate controls for each element; some controls don't apply to some elements (e.g., you can make a Section Header

invisible, but you can't make it required because it's simply static text). Leave the elements you don't want to control with this rule empty.

Tables have three additional, special controls:

1) **Disable Add/Delete** – When you select this value, users may not add or delete rows in this table.
2) **Only Row Creator May Delete it** – When you select this value, only the user who created each row may delete that row.
3) **Only Row Creator May Modify Value** – This option applies to individual table cells. When you select this value, only the user who created the table row may modify the cell value of this column.

Note: While the last rule wins for other rule types (e.g., if two rules calculate a value for the same field, the last rule wins since we run rules in sequential order), the first rule always wins for **element control rules**. Here's an example of why: say you have one rule that makes field X invisible in the Initiate state and another rule that makes field X required in the Initiate state. Obviously, these contradict, so we apply only the first rule. Most authors will never a write contradictory rule but nevertheless, the machine won't put the user in an untenable position (e.g., an invisible required field). This failsafe has implications though; see the Note immediately below.

Note: The easiest way to apply Element Controls is by applying each control in each Workflow State. This often requires redundancy, but it keeps things simple. For example, if you have two workflow states and want to make a field always required, you'd add two rules (one for each workflow state) and make your field required in each. However, when this is inconvenient due to a large number of workflow states and fields, you can use Apply When = "During This Workflow State AND After" or Apply When = "Before This Workflow State". But do so carefully:

- These can be nice, time saving features but
- They can lead to contradictions when not well understood or tested. For example, say you have one rule that makes field Y required in the Initiate state with "During This Workflow State

AND After" and another rule that makes field Y non-modifiable in the next state. If the 'required' rule precedes the 'non-modifiable' rule, field Y will never become non-modifiable (see the Note immediately above). In this case, you should make the 'non-modifiable' rule precede the 'required' rule due to the "During This Workflow State AND After" statement on the 'required' rule. This can become complicated so test the conditions well.

- **Make Smart Procedure Steps required and non-modifiable by Workflow State** – In the 'Target Field or Workflow State' column, select a workflow state. Then press Define and select 'Must Complete Steps Through', 'Steps Non-Modifiable Before', or 'Steps Non-Modifiable After' in the Operation fields. Now select a Procedure Step.

- **Skip Workflow States Based on Data Conditions**– In the 'Target Field or Workflow State' column, select a workflow state (Other than 'Initiate'). Then press Define and select 'Skip Based on Data Conditions' in the Operation fields. Now define the conditions under which you want to skip this workflow state. Conditions may include:
  - the presence of specific list value,
  - a numeric field that eclipses a threshold, or
  - the absence of specific child topics types (either no child topics or no open child topics of a specific type).

- **Always Skip Workflow States** – In the 'Target Field or Workflow State' column, select a workflow state (Other than 'Initiate'). Then press Define and select 'Skip Always' in the Operation fields. Since you can't remove workflow states for new template revisions, this option is useful for new revisions that no longer need an existing workflow state.

- **Skip Workflow States When Topic is Part of a Package** – In the 'Target Field or Workflow State' column, select a workflow state (Other than 'Initiate'). Then press Define and select 'Skip When Packaged' in the Operation fields; we skip this workflow state when a topic is a child within a

package. When a topic is not part of a package (or is the parent of a package) we ignore this rule.

- **Define Workflow Assignee and Due Date by Workflow State** – In the 'Target Field or Workflow State' column, select a workflow state. Then press Define and select 'Assignment Details' in the Operation fields.
    1. To define a due date, select a Due Date Default Type:
        a. **Offset Value** – enter an offset value. When we enter the workflow state, we add the offset value in days to the current date to arrive at the due date for the workflow state.
        b. **Default From Field Value** – select a date or numeric field.
            - For a date field, when we enter the workflow state, we default the workflow state due date to the value in that date field. If the date value is earlier than today, we make the due date equal to today.
            - For a numeric field, when we enter the workflow state, we add the value in days of that field to the current date to arrive at the due date for the workflow state. If the field holds a negative number, we make the due date equal to today.
    2. To define an assignee, select an Assignee Type. When we enter the workflow state, we'll make the appropriate assignment.
        a. **Initiator** – assignee becomes the person who created the topic
        b. **Current Assignee** – assignee does not change
        c. **Logged On User** – assignee becomes the user who advances the workflow
        d. **Supervisor of Logged On User** – assignee becomes the supervisor of the person who completes the current workflow state
        e. **Named Person** – Select the specific person, by username, to receive the assignment
        f. **Named Team** – Select the specific team to receive the assignment
        g. **Reference Value** – We automatically populate a list of elements that can hold person or team names from the

Reference Data elements you included in this template. Select one of those elements and the assignee becomes the person or team named in that element. For example, you might have a 'Physical Buildings' template containing an element called 'Building Manager' which references a system user by name. If your template contains a Reference Data element that points to 'Physical Buildings', you'll be able to select 'Building Manager' as the assignee. When assignment time comes, we look at the 'Physical Building' referenced in the topic then grab the 'Building Manager' who is referenced in the specific 'Physical Building'.

h. **Holding Tank** – assignee becomes "Holding Tank" (so no real person receives the assignment) and the due date is infinite. This is a useful choice for topics you want to keep open indefinitely, such as reference data topics.

3. To make this rule conditional, select a value in 'When Field Is', then select a field value. For example, you may have a list-of-values element in your template called 'Size' with values of 'Large' and 'Small'. You write the condition that this assignment rule only applies when 'Size = Large', write another rule that applies when 'Size = Large', and write a 3rd rule that has no condition in it to handle the case when 'Size' has no value.
4. Rules run in order so the last rule that applies wins; always sequence rules with no conditions first and rules with conditions next. The no-condition rule will always pass and then it may be conditionally overwritten (this way you only need additional rules for conditions that drive special assignments or due dates).
5. Also, we grouped assignee and due date into the same rule, but you can write independent rules for each. For example, you might write one rule to set the due date with no conditions (leaving 'Assignee Type' empty since we don't want to address assignee in this rule) and multiple rules for 'Assignee Type', each with a different condition (leaving 'Due Date Offset' empty since we don't want to address due date in this rule). Your single due date rule will always set the same due date since it has no condition, then your assignee rules will apply

based on condition. This way you don't have to repeat the 'Due Date Offset' value in the multiple assignee rules.

- **Offer/require completion comments by Workflow State** – It can be useful to collect comments from users as they advance workflow, particularly after workflow has been rolled back (so user can explain why things are different now). But asking for comments can be intrusive too, so we don't offer workflow state completion comments unless you write rules to turn them on.

  In the 'Target Field or Workflow State' column, select a workflow state. Then press Define and select 'Completion Comments' in the Operation fields and select one of these values in the Offer/Require field:

  - **Offer Optionally** – we always interrupt workflow advance to offer user comments but never require them.
  - **Always Require** – we always interrupt workflow advance and always require user comments.
  - **Require After Rollback Only** – we only interrupt workflow advance when the current state was reopened (rolled back to), then we require user comments.
  - **Require After Rollback and Offer Optionally** – we always interrupt workflow advance to offer user comments and we require them when the current state was reopened (rolled back to).

- **Default Element Values** – You may define default values for many Data Capture elements.

  In the 'Target Field or Workflow State' column select your element of interest then press Define. Select a default type in the Operation field. In some cases, you have multiple default types to choose from.

  You may also default a value in this template from a value of the same type in a referenced topic (Reference Data element).

- **Enforce Date Value Constraints** – You may want to prevent the user from adding an inappropriate date. For example, you may want to prevent a newly added date from being greater than today.

  In the 'Target Field or Workflow State' column select your element of interest then press Define. Select 'May Not be Greater Than Today +/- Offset' or 'May Not be Less Than Today +/- Offset' in the Operation field. Then enter an offset value. If the user enters a date outside the today +/- range, we throw an error and prevent the user from moving on before making a correct. We only run this rule at the time of date entry (as time passes, we don't throw errors that suddenly come into begin without new user input).

- **Enforce Data Matches** – Say you're creating work order template for a specific asset (e.g., Pump 100e14a) and you want the user to verify that she's found the right pump before she starts to work on it. You create a 'Small Text' element in your template, default its text value to '100e14a' and make it always non-modifiable. Now create another 'Small Text' element where the user will enter (or barcode read) the serial number of the asset she's about to work on (or create a 'Reference Data' element where the user will select, or barcode read, the asset). Finally create a Data Match rule.

  In the 'Target Field or Workflow State' column, select your 'Reference Data' or 'Small Text' element of interest then press Define, and select 'Must Equal Value In Field' in the Operation field. Then select the text field you want to match against. If a user changes the value in the target field to something that doesn't equal the value in the field you match against, we throw an error.

- **Enforce Numeric Thresholds** – You may want to prevent (or warn) the user from adding an inappropriate (or concerning) numeric value. For example, you may want to show a warning message when a numeric value is less than 10 but throw an error when the value is less than zero. Messages warn the user while errors prevent him from moving on.

In the 'Target Field or Workflow State' column select your element of interest then press Define. Select 'Upper Threshold' or 'Lower Threshold' in the Operation field and 'Fixed Value' or 'Field Value' in the 'Compare To' fields. For fixed value comparisons, enter a number. For field value comparisons select the field you want to compare to. Finally select 'Message' or 'Error' in the 'Present Violation as' field.

- **Perform Numeric Calculations** – You may add a calculation to any numeric Data Capture Element in your template. When you add a calculation to an element, that element becomes non-modifiable.
  We offer these operations: Add, Subtract, Multiply, and Divide. Simple calculations involve one operation while complex calculations involve multiple operations strung together through multiple rules. For a complex calculation, select Target = 'Temporary Number' as the target for initial rules, then add a final rule that use the Temporary Numbers.

  For example, to create this calculation (Field1+Field2) / (Field3 * Field4 * Field5), write three rules in this order:

  1. TemporaryNumber1 = Add (Field1, Field2)
  2. TemporaryNumber2 = Multiply (Field3, Field4, Field5)
  3. Target Field = Divide (TemporaryNumber1, TemporaryNumber2)

  To create a calculation, in the 'Target Field or Workflow State' column select your numeric element of interest then press Define. Select an Operation from this list: Add, Subtract, Multiply, Divide. On the left side of the screen you'll see a list of available operands. Press an operand and we add it to the Operands field on the left. Press another operation and we add it to the Operands field on the left separated by a comma. We build a comma delimited list of Operands. The list is human editable so if you want to remove a field, edit the Operands field. If you want to include a fixed value (like 100), manually add it to the list.

  We apply your Operation to your Operands, left to right. For Subtract and Divide operations, left-to-right order matters.

Here's the way we operate on table columns:

1. When your target is a table column, we apply the calculation to each cell in the that column.
2. When your target is not a table column and an operand is a table column, we sum the cells in the operand column then use the sum as the operand value.
3. When your target is a table column and your operand is a column in a different table, we sum the cells in the operand column then use the sum as the operand value.
4. When your target is a table column and your operand is a column in a same table, we use the column cell value from the row we are operating on as the operand. For example, this lets you sum cells across table columns, for each row.

- **Define Procedure Smart Branching** – Normally, smart procedure steps follow sequence. Smart Branching is the ability to conditionally move from one step to another out of sequence (skipping one or more intermediate steps). Using this simple approach, you can create extremely complex paths through a procedure, skipping entire sections as appropriate.

  Branching Conditions always occur within the procedure step that the user is currently working on. If you want to branch based on an element outside a step, create a similar element inside the step and default it's value from the element you want to use.

  Branching Conditions can include:

  1. a value the user selects in a 'List of Values' element
  2. a numeric value that eclipses a threshold

  In the 'Target Field or Workflow State' column select your 'List of Values' or 'Numeric' element of interest then press Define. Select 'Next Step' in the Operation field. If you don't see 'Next Step' as an option, it's because:

  3. Your target element is not in a step, or

4. There are less than two subsequent steps in the procedure (so there's nothing branch to)

Choose the step you want to branch to in the Next Step field, then define the branch condition:

5. If the target is a "List of Values" element, select one of the values
6. If the target is a "Numeric" element, define the threshold (e.g. < 10)

If the branch condition is true, we navigate the user to the Next Step you selected.

To define multiple branch conditions, define multiple rules. Like all other rules, we run branch condition rules in the order you list them.

- **Set Background Colors** – Sometimes color helps users know the significance of a choice they've made. You may set the background colors of 'List of Values' and 'Reference Data' elements based on their values.

  In the 'Target Field or Workflow State' column select your 'List of Values' or 'Reference Data' element of interest then press Define and select 'Display Color' in the Operation field.

  To set a color for a 'List of Values' element, select a color and value. Write a rule for each color/value pair.

  To set a color for a 'Reference Data' element, select a color, then select a 'Numeric' or 'List of Values' element in the 'When Field' dropdown, then set a condition (e.g., > 10 for a 'Numeric' element, or = XYZ for a 'List of Values' element). Write a rule for each color/condition pair.

- **Conditionally Override Data Capture Requirements** – You may have cases where you wish to relax required conditions. You use conditional override rules to relax requirements for specific cases.

  Override Conditions can include:

  1. a value the user selects in a 'List of Values' element

In the 'Target Field or Workflow State' column select any "List of Values" element then press Define. Select 'Field Control Overrides' in the Operation field, then select a value in the 'When Value is', and select "Not Required" for each field you wish to override. Define one rule for each value you wish to drive an override.

2. a numeric value that eclipses a threshold

   In the 'Target Field or Workflow State' column select any "Number" element then press Define. Select 'Field Control Overrides' in the Operation field, then select an Operator, enter a threshold Value, and select "Not Required" for each field you wish to override. Define one rule for each threshold you wish to drive an override.

- **Managing Data Capture Element Required Conditions** – You make any data capture element "required" in one of two ways:
  1. You make it required by workflow state. See the first rule description above.
  2. Or you place it inside a smart procedure step. By default, all elements, except Checkboxes, in a smart procedure step require a value before the user can complete the step. Use "Yes/No" List Of Values elements in smart procedure steps instead of Checkboxes if you want them to be required.

  You may then conditionally relax or avoid these required conditions using other rules. Here's an example. Suppose you're building an accident reporting template and want to require a photograph whenever the accident involves material damage. First, add an element for the user to capture photographs (use an "Add Image" element). Next add a "List of Values" element which asks the user if any Material Damage was done (Yes or No). Then take <u>one</u> of three paths:

  a. Make the photograph required for all workflow states, then add a conditional override (see bullet point immediately

above) that relaxes this requirement when Material Damage = "No".

b. Or, create a Smart Procedure. Put the Material Damage element in the first step and the photograph element in the second step. Then branch the procedure to skip the second step when Material Damage = "No" (see Smart Branching above).
c. Or, put the photograph element in a subsequent workflow state then skip the workflow state when Material Damage = "No" (see Skip Workflow States above).

Note: Override rules must sequentially follow rules that make a data capture element required. Placing an override rule sequentially ahead of a rule that make an element required will do nothing to override the requirement.

Settings

Settings govern appearance and availability rather than content or logic. Press the Settings tab to see the available settings and their current values.

- **Home Screen Sort Tier** – Users select a template on their home screens when they wish to create a new topic. To make selection easy, you may bubble frequent-use templates to the top of the selection list. Templates with "Home Screen Sort Tier" set to '1' will appear first, those set to '2' appear second, et cetera. We apply an alpha sort within each tier.

- **Let Initiator choose organization** – When set to 'Yes' the Initiator of a new topic may select an organization, from the organizations she has access to, to tag the new topic with. As you'll recall, organization governs who has access to the topic for searching and reporting purposes.

  Most of the time you'll leave this value set to 'No' and let the machine default the organization of new a topic to the Initiator's assigned organization.

A couple exceptions:

- If the flag is set to "Yes" but a specific Initiator only has access to one organization, do not offer that initiator an option; we simply act as if the flag was set to "No".
- Regardless of this flag's setting, when someone creates a new child topic, the new topic always inherits the organization of its parent.

- **Permit closure with open children** – When set to 'No' and you may not close a topic until all its child topics, if any exist, are closed or canceled. When set to 'Yes', you may close a parent topic without consideration of child topic states.

- **Permit users to modify annotations** – When set to 'Yes', users may move or remove the annotation marks they made on images or PDFs, as if they made them in pencil (erasable). When set to 'No', it's as if users made annotation marks in pen (permanent).

- **Users may Manually Print** – When set to 'Yes', users may manually generate a PDF of the topic they are working on (and send it to a local printer if they wish to) at any time.

- **Print Cover Sheet** – When set to 'Yes', topic prints contain a coversheet.

- **Print Template Revision** – When set to 'Yes', topic prints show the topic's underlying template revision on the coversheet and page headers.

- **Print Table of Contents** – When set to 'Yes', topic prints contain a table of contents (unless there are no table-of-contents elements available).

- **Print steps in 'Table of Contents' to level** – When set to '1', table of contents (when visible) includes first level process steps. When set to '2', table of contents includes first and second level process steps, et cetera.

- **Print Page Border** – When set to 'Yes', topic prints contain page borders.

- **Print Page Header** – When set to 'Yes', topic prints contain page headers.

- **Print Page Footer** – When set to 'Yes', topic prints contain page footers.

- **Include 'Changes By Revision' as an appendix** – When set to 'Yes', topic contents include template changes as an appendix. Template changes are those that the authors made manual note of while revising a template.

- **Generate an Archive PDF on Closure** – When set to 'Yes', we automatically generate a full topic PDF, including the details of all child topics, when the topic closes or cancels. You may export the PDF for 3rd party storage if you wish to. Note: when you choose to archive, we block the closure of topics with children until all children are closed or canceled.

- **Make PDF Attachments Searchable** – When set to 'Yes', we automatically index the PDF attachments that users add to topics created from this template. This makes the topics searchable by text phrases contained within user-attached PDFs. Because these indexes take up space, only set this value to 'Yes' in cases where it will be valuable to search PDF content.

- **Left Header Region Width** – For the most part, we automatically arrange content elements from top to bottom on the user's screen. This approach lets a create a readable screen for all device types and sizes. However, there are cases where a horizontally portioned screen (left-side, right-side) has appeal. To accommodate this, we offer a block at the top of the screen that we partition into left-side and right-side regions. You may place some, but not all, element types into these regions then we stack these elements vertically within the regions. This setting defines the width of the left-side region as a percentage of the screen width (the right-side region gets the reverse percentage). If you don't place content elements in these regions, we don't show the regions to users at all.

- **Available as Reference Data** – When set to 'Yes', you may reference topics created from this template in other topics. For example, you may create a template to store the definition of physical buildings on a campus. In

another template, you want to record accidents and offer users the ability to select the physical building in which an accident occurred. By making this setting 'Yes' in the physical building template, your physical building topics may be referenced by other topics (per this example, accident topics).

- **Available For Offline Creation** – When set to 'Yes', users may create new topics using this template while they are work offline (no access to a network). To make this happen, we download these template definitions to user devices while users have network access. Downloading templates to user devices, and keeping them fresh, consumes resource so be judicious when deciding to set this value to 'Yes'.

- **Available For Anonymous Creation** – When set to 'Yes', people who don't have a system account may create topics from this template. You publish a URL that ends with '|'+ template code (for example '…|B45X'). When a user opens that URL, we open a new topic from this template (in this case, the latest active revision of the template with Code = 'B45x') and let the user submit it. The person never signed on we don't know who they are, unless they choose to self-identify.

- **Topics are Execute & View Only** – When set to 'Yes', users may not save or submit Topics launched for this Template. They may however execute, view, and print them.

- **Permit Users to Copy a Topic** – When set to 'Yes', users may copy the contents of a saved topic into a new topic. At the time of copy, we let the user decide which elements to copy. However, we don't offer to copy some elements such as signatures, user added images, and user added reference documents.

- **Template Specific Instructions** – You may create a PDF with term definitions, specifics instructions, screenshots, and other details concerning this template's purpose. You upload the PDF here and it becomes available

to users who work on topics that were created from this template. It's a highly focused help document that you create.

- **Restrict Topic Creation or Analysis to Members of these Teams** – You probably don't want all users to have the ability to create all topics. In fact, you'll probably have topics that you want just a few users to create. We offer two ways to control which users can create which topics from templates. This setting is used in the second method described below. The first method below is simply built in.

    1. When you create a template, you assign it to an organization (see Template Identification). Users who are assigned to that organization, or any node in the hierarchy below it, may create a topic from this template so long as you don't override this method in #2 below.
    2. You may name specific teams whose members may create topics using this template. You name these teams in this setting. If you don't name teams in this setting, we revert to #1 above. When you use this method, only members of the teams you name may create topics using this template.

  Similarly, you probably don't want to all users to have analysis (searching and reporting) access to all topics. The above two methods apply to analysis access as well.

  When restricting access to specific teams, you decide if you want to restrict both creation and analysis access, just creation access, or just analysis access for any team.

  Like almost everything else in TopicalApps, templates are data and data access can be one of our more complex subjects, so we created a special section for it. See Who Can Access What Data and When a special section for it.

To better understand setting results, try them and view the results (when authoring a template, make a setting change then press Preview; when you like what you get press Save).

Template Administrators may change settings in 'Active' templates, so if you want to change a setting after you've released a template for use but don't want to create a whole new template revision, ask a Template Administrator to make the change. We restrict this feature to Template Administrators as a failsafe.

Statuses, Revisions, and Changes

Status drives a template revision's availability for use when a user creates a new topic; a template revision must be "Active" for a user to select it during topic creation.

Template revisions can also be available as child references (topics created within topics). A template revision that is in "Active as Child" status is only available as a child reference (never for the creation of a wholly new topic), while a template revision that is in "Active" status is both available as a child reference and as a wholly new topic.

Template authors have access to all template revisions. When you're viewing a template, you're always looking at a specific revision of the template. Only one template revision may be "Active" (or "Active as Child") at a given time, but many template revisions may be in the "Authoring" or "Inactive" statuses.

Template authors may:

Activate a Template Revision – To make a template revision available for production use, set its Status to "Active" (or "Active as Child"). Since, we only permit one active revision at a time, if another revision is currently active, you'll need to inactivate it first.

Create a new Template Revision – To revise an existing template, press the Options icon ≡ then press "New Template Revision". This creates a new

template revision, in 'Authoring' status, by making a complete copy of the current revision and incrementing the Revision value. You may add new fields and workflow states, but you may not remove those that exist (though you may hide fields and skip workflow states you no longer need) or change certain field characteristics that would invalidate reporting across revisions (e.g., you can't change the source of a reference field).

For forms, you can change the underlying image or pdf when you create a new template revision and we automatically replace the existing form fields. But here are some caveats:

- You may need to reposition some fields if the underlying image or pdf content changed.
- If you add a new pdf that has fewer pages than the prior pdf, we don't transfer fields from the last pages that no longer exist. Remember, the machine has no awareness of the pdf content – only the pdf page count.
- If you switch between an image and a pdf (or vice versa) we do not transfer any existing fields. We recommend you avoid doing this since it will remove the fields from existing reports (since we report across revisions). Instead, make the current form invisible and add a new form.

Document Changes between Template Revisions – We do not automatically document revision changes, but you may do so manually for significant changes. Press the Changes tab then press Add to document each change you feel is important. As you create newer revisions, we retain all previously recorded changes so that latest revision will show a full history.

Apply Template Changes to Existing Topics – Existing topics inherit the data structures and behaviors of the template revisions they were created from. You can change an 'active' template back to 'authoring' and make some limited changes (e.g. correct a spelling mistake). New topics pick up these changes, but existing topic do not unless you force them to.

Here's how: If open topics exist when you activate a template, and you have the Template Administrator role, we show a checkbox, with red text description, in the Changes tab. If you check that box and press Save, we apply this template to all open topics (we never change closed or canceled topics since they may have been archived) that use this template revision. Please use this option cautiously. Superficial changes (like a prompt change) are fine, and we don't permit data or workflow structure changes after topics exist, but new logic could adversely affect existing topics. You should be able to think through the consequences of your changes before applying them. Once made, some changes in topics are irreversible, so again, please use this option cautiously.

To make more significant changes, create a new template revision. Changes you make to new revisions never transfer to topics created from prior revisions.

Copying a Template

When you need a new template, you may consider copying an existing template as a starting point. Simply open then template you want to copy, press the Options icon ≡ , press "Copy Template", enter the required information, and press Save. Your new template operates independently of the template you copied (changes you make have here have no impact on the template you copied).

Exporting a Template to PDF

If you want to store a template definition externally for sharing, safe keeping, or paper backup, you may export it PDF. Press the Options icon ≡ and press 'Export to PDF'. This saves a copy of the template in PDF form on your device (probably in your Downloads folder). Note: This feature is available only through a browser (it's not available through our App).

When you open the PDF, it will appear as it would to a user who printed a topic created from this template, but the PDF also contains the full template structure in hidden meta data so you can use the PDF document for safe keeping or sharing between areas (see 'Importing a Template from a PDF' below).

Importing a Template from PDF

You may move a template between physically separate areas by exporting it (see 'Exporting a Template to PDF' above) then importing it to a different area:

1. From the Templates tab on your home screen, press Import a Template Note: This feature is available only through a browser (it's not available through our App).
2. Then select the TopicalApps PDF of your choice (when you export a template to PDF, we embedded the full template structure in hidden meta data; import grabs the metadata and applies it to your new template)

On successful import, we recommend a list of next steps (such as verifying reference data connections; if the imported template is from an external source, it won't not match your existing reference data sources so you'll need to reconnect them, et cetera).

Pre-Release Testing

Rapid iteration is the best way to get what you want quickly but production-ready software requires an extra step, though a different set of eyes. We automatically provide a Pre-Release-Test area for you to perform standard pre-release testing.

Before you set your template's status to 'Active', log on to your organization's Pre-Release-Test area and run your pre-release tests. Usernames and Passwords are the same as in Production.

Functionality in your Pre-Release-Test area is identical to Production except in your Pre-Release-Test area:

- You create topics from templates that are in "Authoring" status (which is opposite of production where you create topics from templates that are in "Active" status)
- You cannot edit templates, save analyses (reports and charts), or manage administrative options. Instead, you inherit these from Production.
- We don't run alerts or send notification emails

You can access data that resides your Production area for reference purposes, which saves a huge amount of time because you don't need to replicate reference

data (e.g. equipment lists) into your Pre-Release-Test area. But you can't edit Production data from your Pre-Release-Test area, and Topics you create in your Pre-Release-Test area never shared with Production.

To access your Pre-Release-Test area:

In a browser, append '1' to the end of your URL Owner Key. For example, if your normal URL Owner Key is 'D45XC2L44A' then your Pre-Release-Test URL Owner Key is 'D45XC2L44A1'.

- In our app, append '1' to the end of your Owner Key. For example, if your normal Owner Key is 'D45XC2L44A' your Pre-Release-Test Owner Key is 'D45XC2L44A1'.

Here are some guidelines for pre-release testing:

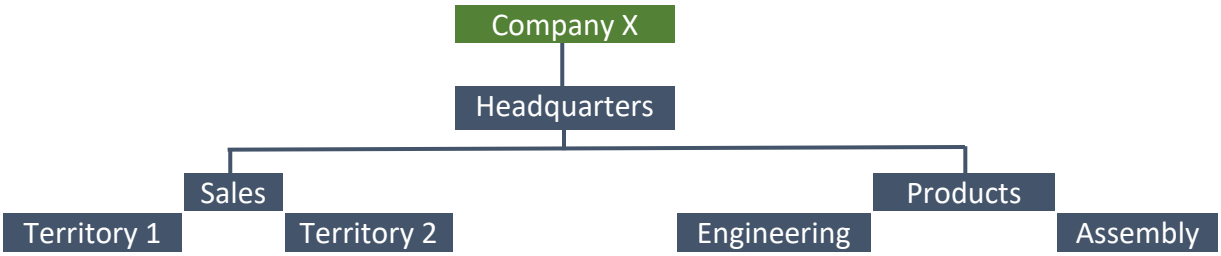
- Check the template you're testing for correct naming conventions
- Use test scripts that follow all paths through the process
- Include negative tests (e.g., enter invalid dates or skip required fields)
- Save a topic at a couple different points and open it from your home screen
- Test the workflow transitions, with different users
- Run some searches or reports with the topics you create
- Someone other than the template's author should perform the tests
- Perform the tests on the device(s) your users will use
- The tester should formally document findings and suggestions
- The author should address all documented findings, and respond to them in writing, before another round of pre-release testing

Who Can Access What Data and When

TopicalApps has multi-organization capabilities that let you segregate data as you choose to. Your TopicalApps Primary Administrator sets up an organization structure, which can reflect your real organization or something simpler.

A caveat: Just because you can create a complex data segregation structure doesn't necessarily mean you should. It takes some time to maintain a complex structure so please think through your needs for data segregation before mimicking your actual organization. You can always add more structure later.

The permanent top of your organization structure is the software license holder, then you build your structure down from that. Let's say you've setup the organization structure shown in the diagram below. The green box is the license holder.



Every piece of data gets assigned to a node in your organization hierarchy, including Users, Teams, Templates, Topics, Reports, et cetera.

Let's say you've added these users.

User	Assigned to Organization	Has these Roles
A	Company X	General Administrator
B	Headquarters	General Administrator
C	Headquarters	Template Author, Topic Participant, Analysis Participant
D	Sales	General Administrator
E	Sales	Template Author, Topic Participant, Analysis Participant
F	Territory 1	Topic Participant, Analysis Participant
G	Territory 2	Topic Participant, Analysis Participant
H	Products	Template Author, Topic Participant, Analysis Participant
I	Engineering	Topic Participant, Analysis Participant
J	Assembly	Topic Participant, Analysis Participant

Data segregation usually works top down (we'll get to some important exceptions in a bit). In the examples below we use these terms:

- **Find** means search for or report on.
- **Manage** mean create and edit. We use the term 'manage' for all items except Topics. Since Topics have workflow, we use the terms 'submit' and 'process' instead.
- **Submit** means create a new Topic.
- **Process** means open, edit, and advance a Topic that is currently assigned to you or for which you may act on the behalf of another user. Topic Coordinator and Topic Administrator roles permit users to act on behalf of others to process Topics (but only for the Topics they can find). Most users may find and view many Topics that they can't process.

These examples cover top-down data access conditions:

- User A can find and manage all Users, Teams, and Schedules.

- User B can find and manage Users, Teams, and Schedules at the Headquarters level and below but can't find Company X Users, Teams, or Schedules.

- User C can find and manage Templates at the Headquarters level and below but can't find Company X Templates.

- User C can find Topics at the Headquarters level and below but can't find Company X Topics (see an exception to this below where the User C is the current assignee of a Topic belonging to Company X).

- User D can manage Users, Teams, and Schedules at the Sales level and below, but he can't find Company X, Headquarters, Products, Engineering, or Assembly Users, Teams, or Schedules.

- User E can find and manage Templates at the Sales Level and below, but she can't find Company X, Headquarters, Products, Engineering, or Assembly Templates.

- User E can find Topics at the Sales Level and below, but she can't find Company X, Headquarters, Products, Engineering, or Assembly Topics.

- User F can find and manage Topics in Territory 1, but that's it.

Users can process Topics that are assigned to them, regardless of where a Topic sits in the hierarchy. Users can find their Topic assignments on their home screen (in the 'Topics Requiring Your Action' section).

For data analysis, we apply top-down data access conditions with one exception:

- When a user runs an analysis (e.g., a report), she may find topics at her node and below plus all topics currently assigned to her (either individually or through a team she is a member of). When the user completes her assignment, if the topic resides outside the users' top-down organization hierarchy she will no longer be able to find it.

There are two case where we look both up and down the hierarchy:

- When a user advances a Topic that requires manual assignment, the user may select from potential assignees at his organization node and at the nodes above and below (but not the nodes of other branches). For example, user E may assign users F, G, or C but not users H, I, or J (she can't find users A or B either because they don't have any Topic roles; if either did she could assign them too).

- When a reference field points to 'System Users', the user may select users at his organization node and at the nodes above and below (but not the nodes of other branches). For example, user E may select users F, G, C, B or A but not users H, I, or J.

- The two statements above pertain to Users, not Teams. Teams always follow the top-down-access approach.

There is one case where we look up the hierarchy only:

- Topics that contain Reference Data elements permit users processing that Topic to select existing Topics that were created from the referenced Template. We build the list of Topics that a user may select by looking up the hierarchy of the Topic, not of the User (a new Topic inherits the organization of the user who submitted it).

  Reference Data is inherited (shared) from ancestors, that's why we look up to find it. For example, someone processing a Sales Topic may select reference data from Sales, Headquarters, or Company X Topics.

There is one case where look up the hierarchy with additional consideration:

- When a user wishes to submit a new Topic, we present a list of Templates available to her. She then chooses one, enters data, and submits it down the workflow path. The new Topic inherits the submitting user's Organization. Here's how we build a user's Templates available for submission list:
  1. We add Templates at the user's node and above unless a Template is overridden per #2 below.

  2. Template authors may name Teams whose members may submit Topics from specific Templates. If a Template has a list of named Teams, only users in those Teams will see that Template.

  Templates are shared data when it comes to Topic submission, so you want to assign them to the highest node that makes business sense.

  For example, if you want to create a corporate wide accident reporting process, you'd assign your 'Accident Reporting' Template to Headquarters so the full company can submit accident reports.

For another example, you may want to create a weekly sales tracking process. In this case, you'd assign your 'Weekly Sales Tracking' Template to Sales so only Sales users and below would see that Template for Topic submission.

For another example, you may want to create a Reference Data Template for storing information about physical building (build name, address, capacity, et cetera). You'd assign your 'Physical Buildings' Template to Headquarters so anyone submitting an accident report could select any physical building. But you don't want everyone in the company to submit new physical buildings (in fact you'll want very people to do this) so you use option #2 above.