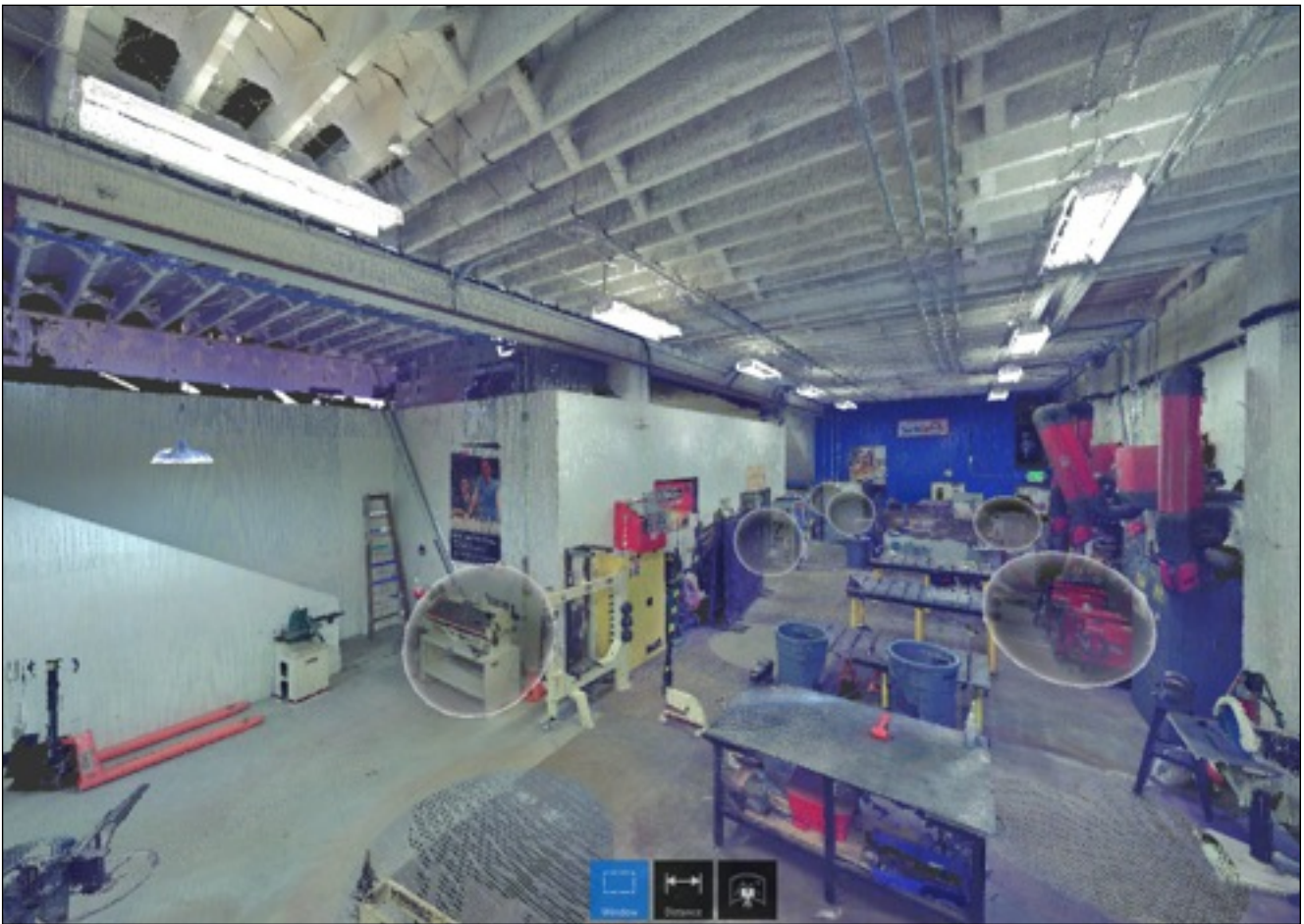# Introduction to ReCap

AU 2013

Mason Foster | UX Architect

Getting Around

1. Launch ReCap Pro from the desktop

2. Click the Open button, then double-click
   \TechShopDataset\ReCapPro\TechShop.rcp to open the sample
   project file

3. Use the right-mouse button to explore the project:
   - right-drag to **orbit**
   - middle-drag to **pan**
   - scroll wheel to **zoom**
   - SHIFT+right-drag to **fly**; scroll wheel to **change speeds**
   - CTRL+right-drag to **look**
   - ALT+right-drag to **tilt**

4. Use sticky keys with the left-mouse button to explore the project:
   - press and hold **Z** to **zoom**
   - press and hold **X** to **orbit**
   - press and hold **SPACEBAR** to **pan**
   - press and hold **C** to **fly**
   - press and hold **V** to **look**
   - press and hold **N** to **tilt**

5. Navigate to the end of the shop, facing the blue wall in the back, like so:
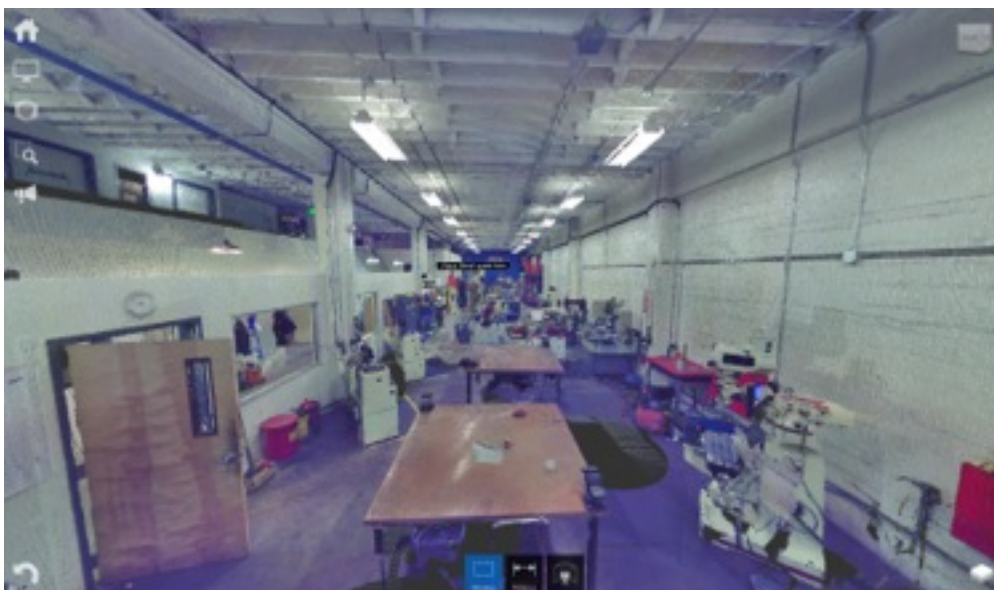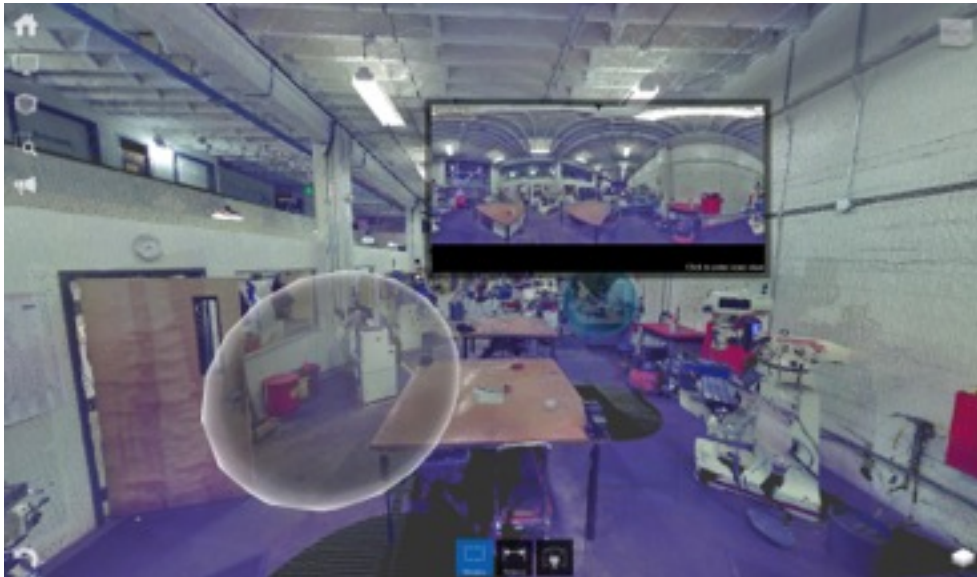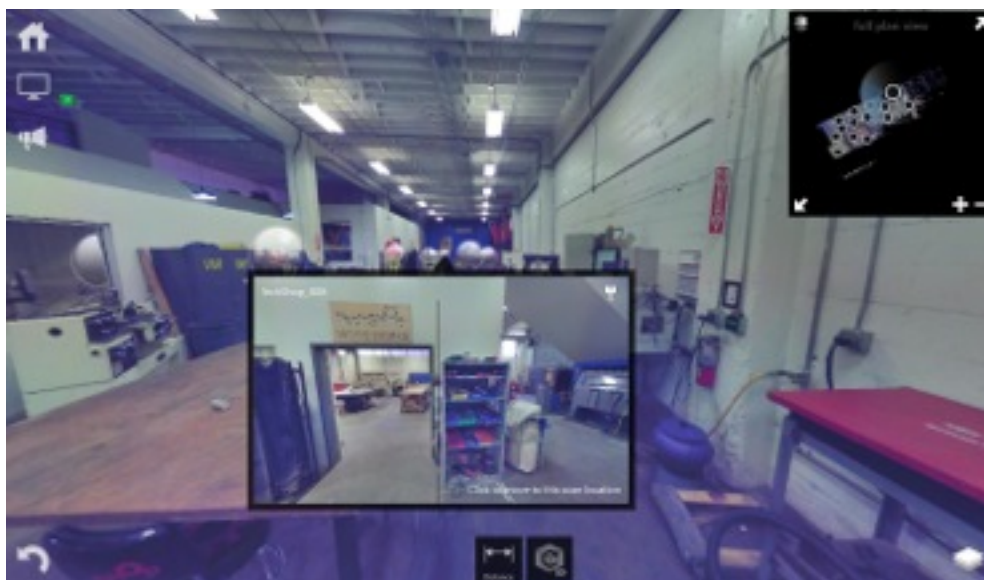
6. Press the **period key** (.) to turn on mirror balls

7. Click on the mirror ball for **TechShop_001** to enter its scanorama view:

8. Use the right-mouse button to explore the scanorama view:
   - drag any button to **pan**
   - scroll wheel to **zoom**

9. Hover on the **TechShop_008** mirror ball in the back, drag in the tooltip preview until you're facing the "TechShop Woodworks" sign:

10. Click the tooltip preview

    Note that when you move, you adopt the orientation from the tooltip preview; this gives you the ability to "look around corners" before you navigate.

11. In the top-right corner, click the **TechShop_001** map icon to return to that position

12. Click the **return to 3D** button

Viewing Data

1. Hover on the **Display > Color mode** tile, then click through each of the various color modes

2. Next, explore the options found in the **Display > Lighting** tile

   > keyboard shortcut tip
   >
   > you can cycle through color modes using **slash** (/) and you can cycle lighting options with **backslash** (\)

3. Set the following display modes:
   • Color mode: **Elevation**
   • Lighting sides: **Double**
   • Shader mode: **Phong**

4. Click the gear on the gradient ramp, click click **Edit** Current, then make the following changes:
   • Change **smooth** to **steps**
   • Click **range**, then click the target icon next to the max/min values and select points near the top and bottom of the building, respectively
   • Press **Enter** or click **Save** to apply
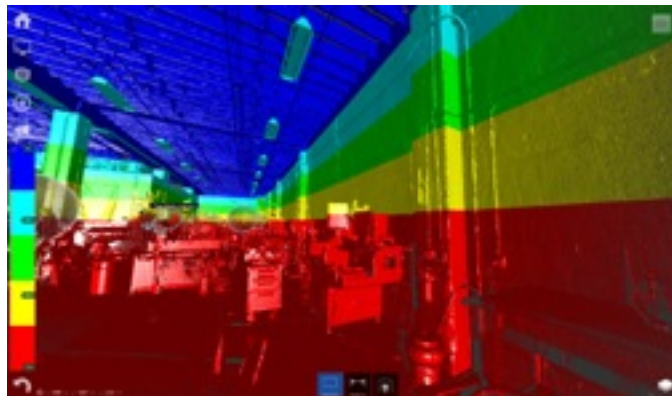
5. In the bottom-right corner, hover on the **Project Navigator** icon, then hover on the **View States** row, then click the plus icon that appears, then press **ENTER** to accept the default name.

> **did you know?**
>
> view states are incredibly useful for navigating and presenting your project; each view state stores:
> - camera position
> - display settings
> - clipping/limit box
> - region settings



6. Press **slash** (/) several times to cycle your display mode back to RGB

7. From the tile menu, Click **Edit Limit Box**

> **keyboard shortcut tip**
>
> press **L** to edit the limit box

8. Adjust the limit box to align with the extents of the project
   - Drag limit box **faces** to **push/pull**
   - Drag limit box **edges** to **rotate**
   - Press **TAB** to **toggle inside/outside** face selection

9. In the limit box contextual tools at the bottom of the screen, choose **Options > Highlight Edges**
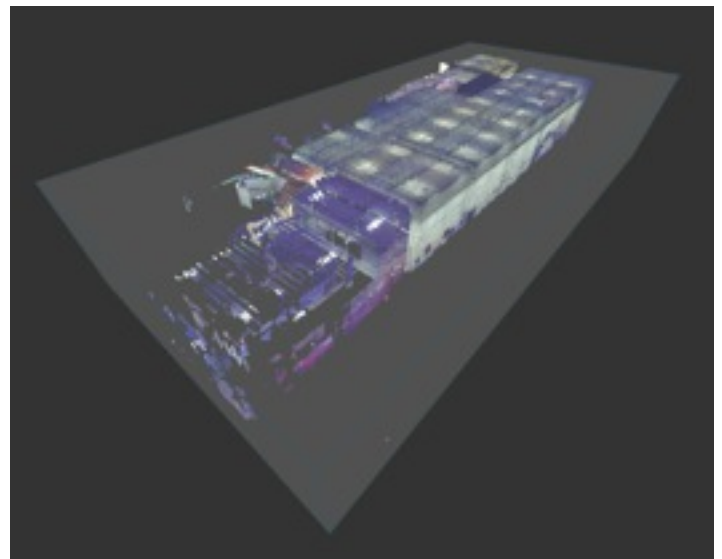
10. Adjust the limit box again to remove the area in front of the building, like so:
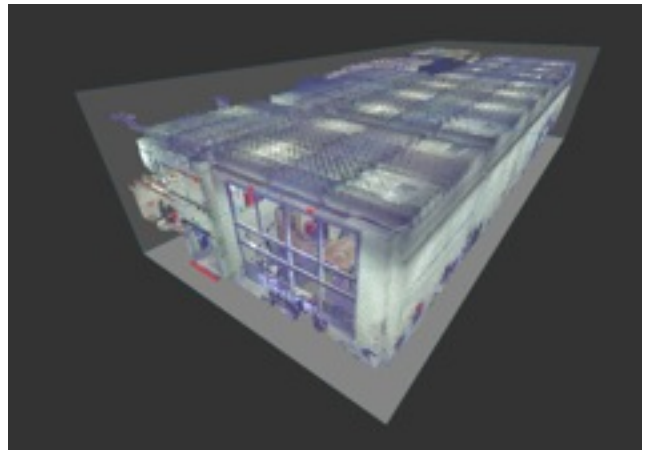
11. Press **ENTER** or click **confirm** to apply the limit box

12. Using the Project Navigator, create a new view state, and press **ENTER** to confirm the name.

Selection & Regions

1. In the Project Navigator, click **View State 01** to return to your original position inside the building
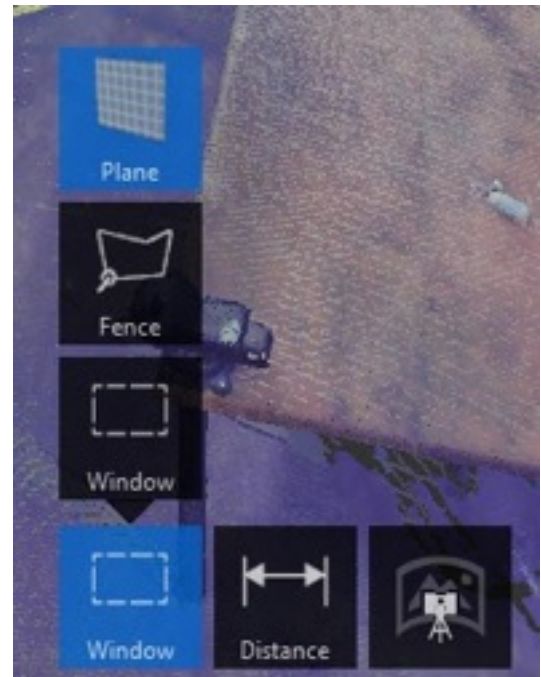
2. Press **slash** (/) until the color mode returns to RGB

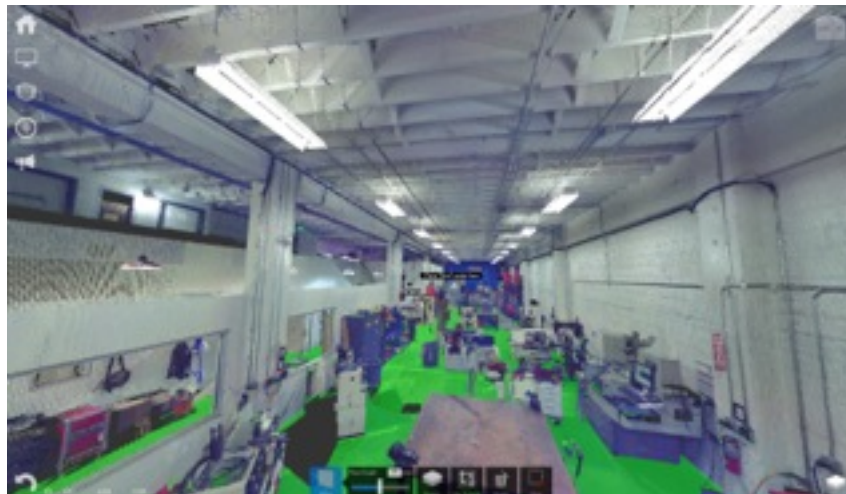3. Click the **Update** icon next to the view state to update it with the new color mode
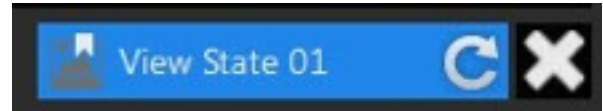
4. Hover over the **Window** tile at the bottom of the screen and choose **Plane** to enable plane selection mode.

5. Click several locations (at least 3) on the floor and press **ENTER** to confirm your selection


6. Hover on the **Region** tile and click **New Region**; name your region **Floor** and press **ENTER**

7. Open the Project Navigator and **lock** the scan region you just created

8. Use the plane selection again to select the right wall, then:
   - Create a new region from your selection called **Right Wall**
   - **Hide** the region

9. Orient your view so that you are looking into the building, then create a new View State:

10. Press **L** and adjust the limit box so that all of the walls are clipped, and only the main hallway is visible:
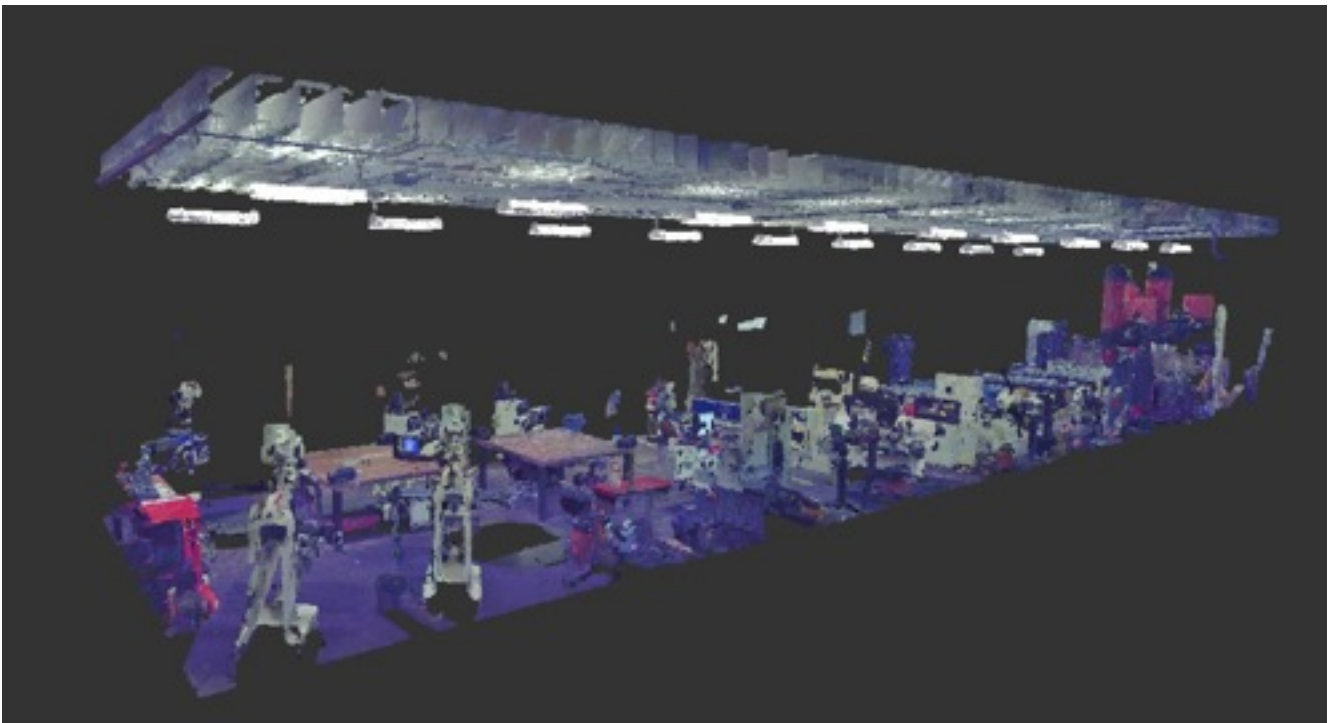
11. In the Display tile menu, choose **Settings > Perspective** to turn off perspective, then line up your view so that you are looking straight down the hallway

12. Press **ESC** several times to make sure you are back to Window selection, then drag a rectangle around all of the equipment in the scene.

13. Press **DELETE** to remove the equipment, then turn on Perspective again

14. Press **L** to display the limit box tools, and click **Reset**
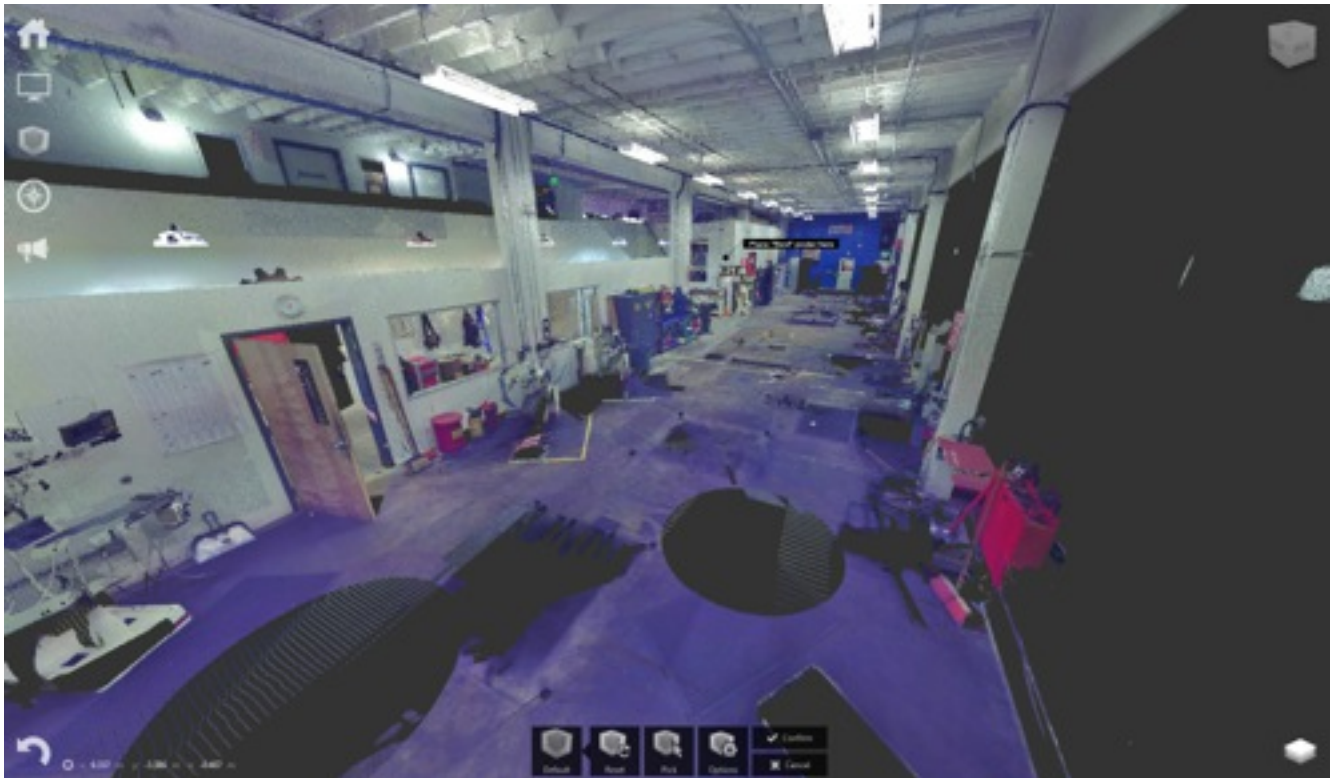
Annotation & Measurement

1. In the Project Navigator, click **View State 01** to return to your original position inside the building

2. Navigate to the blue cabinet labeled "staff only", then use the annotation tools to:
   - measure the **height** of the cabinet
   - measure the **angle** between the floor and the cabinet
   - add a **note**

> ### tip
>
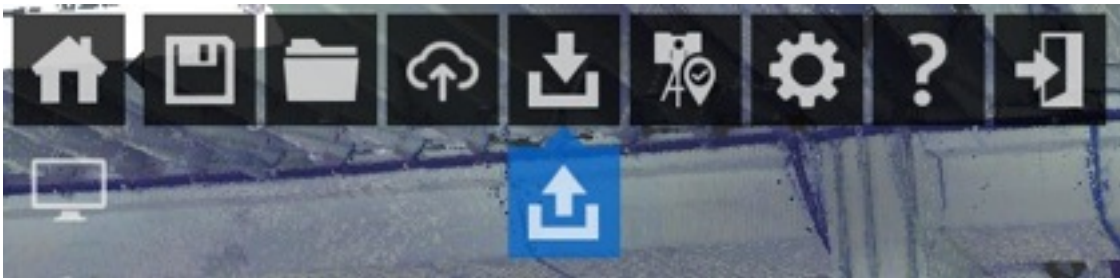> angle measurements require three clicks:
> 1. click on the first plane
> 2. click at the intersection of the two planes
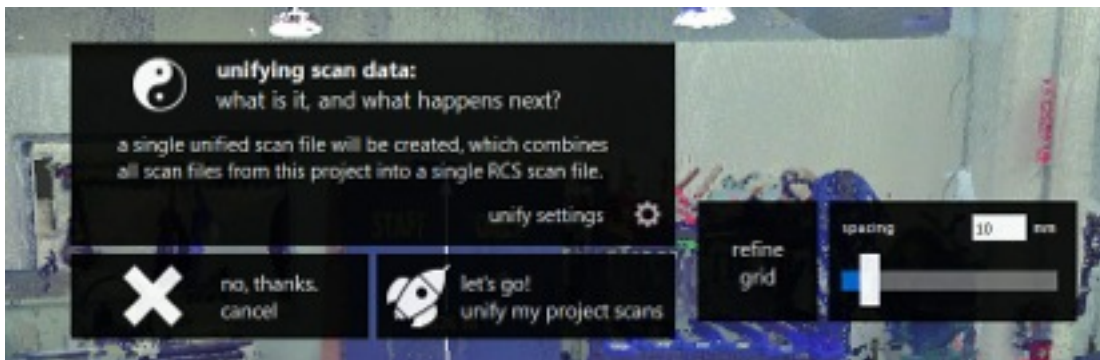> 3. click on the second plane

3. Click on the note you just created, and **delete** it.

Publishing Data

1. In the main tile menu, choose **Home > Export**

2. Enter a filename, then press **ENTER**

3. In the info dialog, hover on the gear next to **unify settings**, then set the spacing to 10mm (the larger this value, the less points are stored, resulting in a smaller, but less detailed file)

4. In the interest of time, click **cancel**.

5. In the top-right corner, click **Sign In**, then enter the following login data:
   - Login: **AURC2013**
   - Password: **Autodesk123**

6. In the main tile menu, choose **Home > Publish to ReCap 360**, then (in the interest of time) click **Cancel**

7. In the top-right corner of the program, click your user name and choose **ReCap 360**
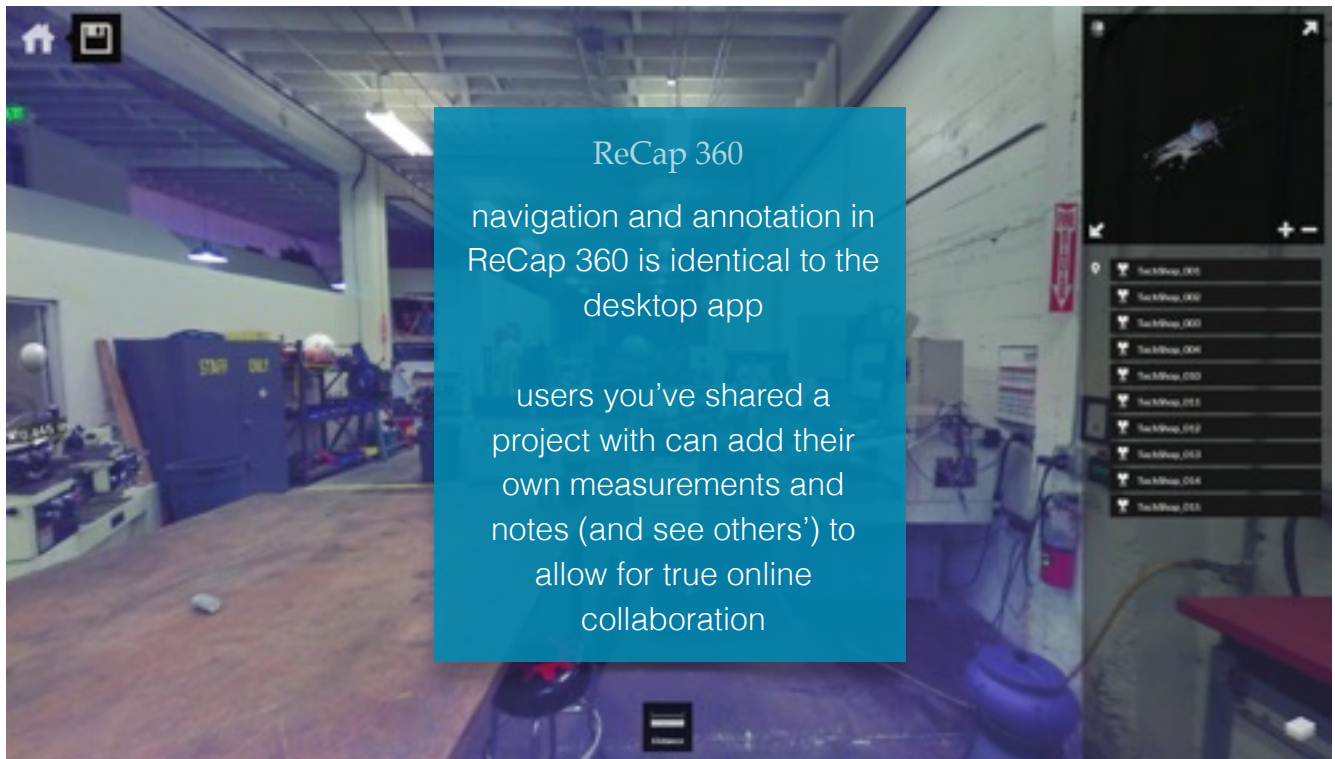

8. In the browser, click **TechShop** in your recent projects list

9. Click the **TechShop_001** scan in the top-view map

10. Explore the project in the ReCap 360 viewer

ReCap 360

navigation and annotation in ReCap 360 is identical to the desktop app

users you've shared a project with can add their own measurements and notes (and see others') to allow for true online collaboration
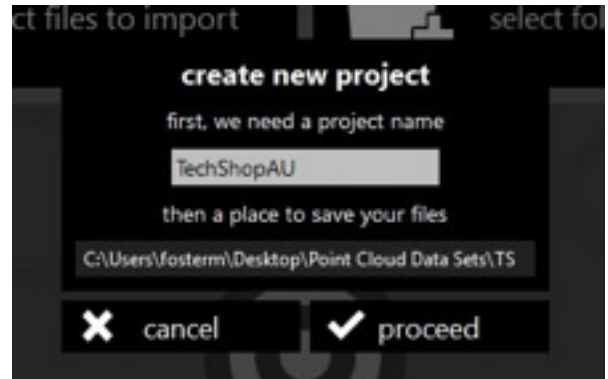
Import & Registration

1. In ReCap Pro, click the **Home** button, then click **new project**

2. In the create new project dialog:
   - name your project **TechShopAU**
   - click the folder location, and navigate to the **\TechShopDataset** folder on your desktop

3. Open Windows Explorer and navigate to **\TechShopDataset\FLS**; select all of the files and **drag them** into the ReCap window

4. Click **register scans**

> ### did you know?
> if your scans are already registered, you can hover on the **register scans** button to access an option to skip registration

5. Before you start registration, you need to choose a base scan; the first imported scan is selected by default. Press **ENTER** to accept this scan as your base.
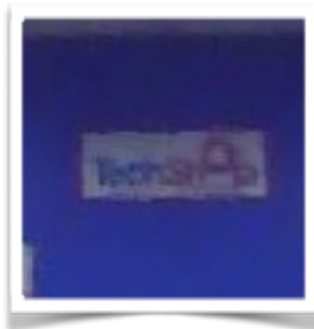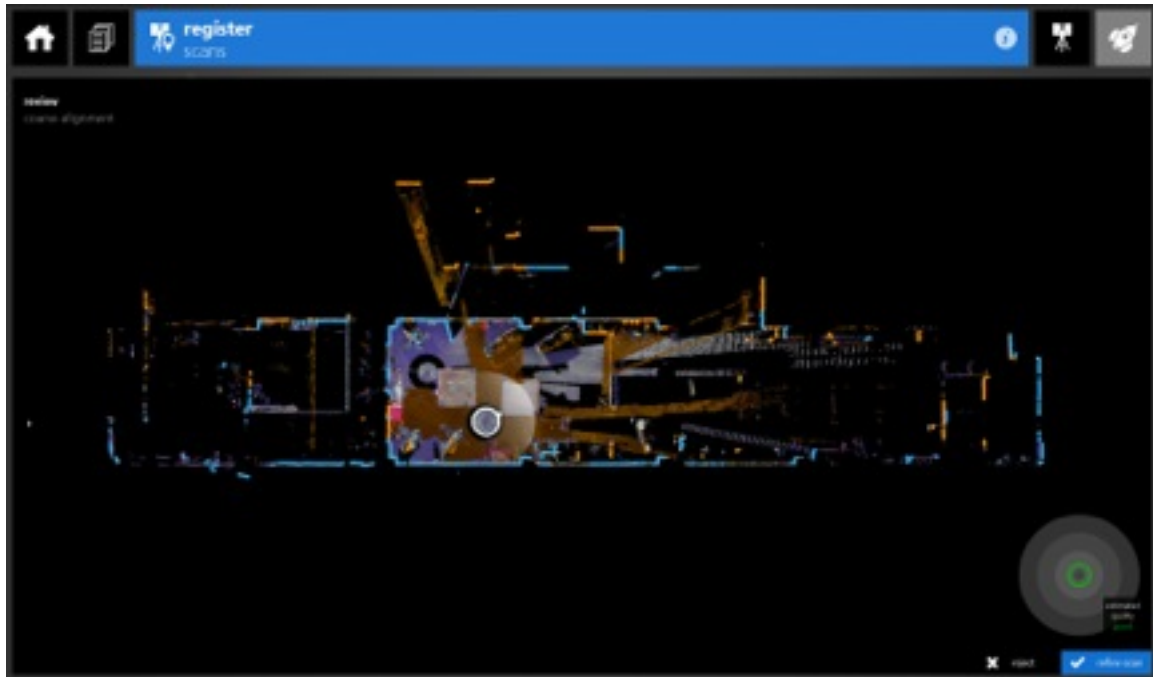
6. Look over the registration tips, and click **got it**
   - choose **flat surfaces**, not edges or corners
   - choose surfaces which are **spread out**
   - you don't need to be exact, **just get close**

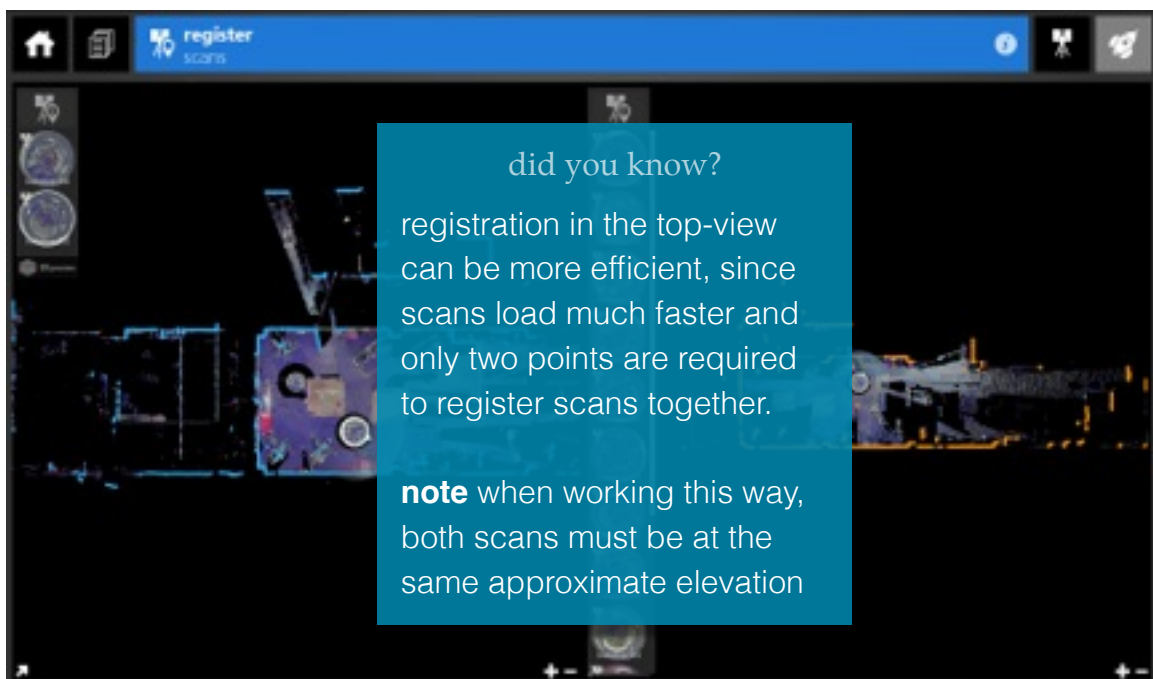7. Click the following three items in both **techshop_000** and **techshop_001**

8. If everything looks good in the review window, click **refine scan**

Note: While your previous scan is refining, you can start placing points in the next unregistered scan; once the refinement is complete, the review window will open again so that you can approve or reject the registration result

9. Press **TAB** to switch to a top-view of the scans; right-drag to rotate the scans into a similar orientation:

did you know?

registration in the top-view can be more efficient, since scans load much faster and only two points are required to register scans together.

note when working this way, both scans must be at the same approximate elevation

10. The colored points in each scan represent strong feature points; **click two corresponding points** in each scan to proceed
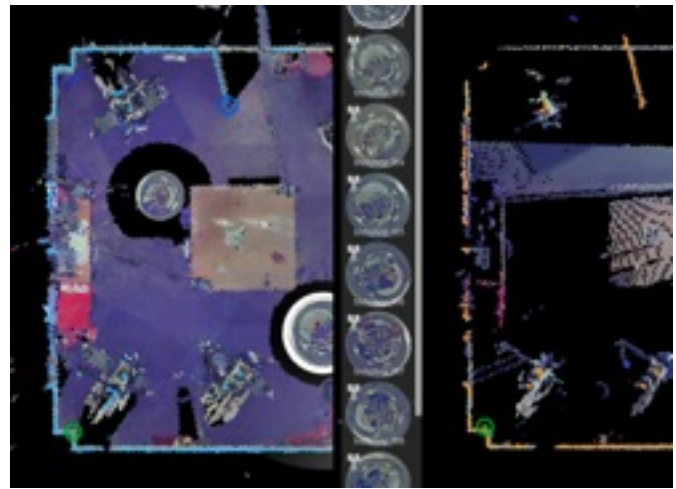

11. Once the registration refinement is complete, the registration result appears for you to **approve** or **reject** the result
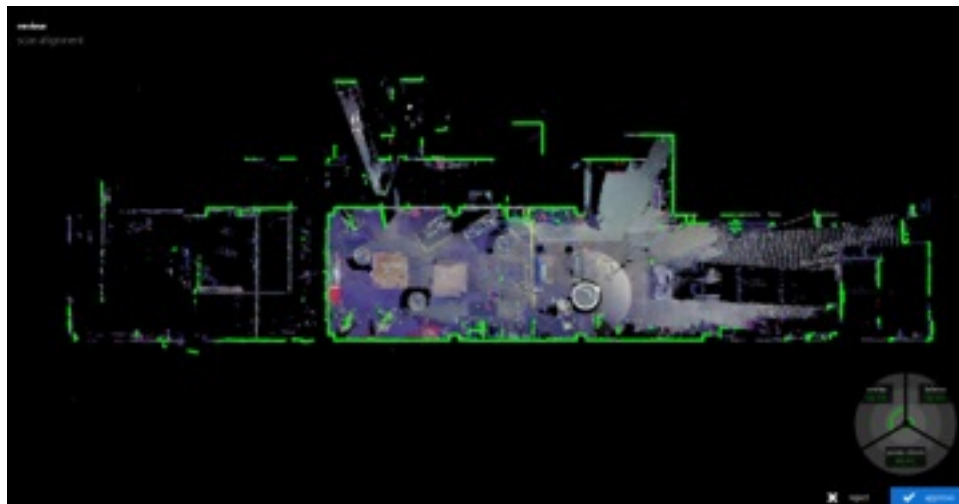
The feature points are colored green, yellow, or red to indicate the confidence of the match. In the bottom-right corner, several additional 'scores' give a bit more information about the result; hovering over each label shows additional information about the score:

12. If you are having trouble matching scans, (e.g. working with different rooms/hallways in a building), it can be useful to create registration groups for each area, and then connect the groups together later.
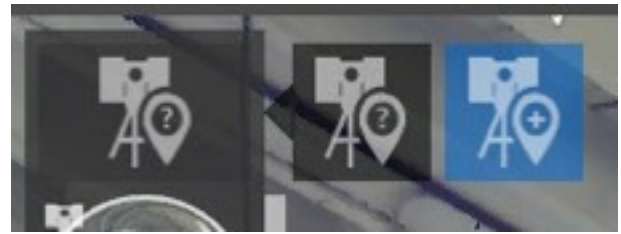

Select **techshop_009** in the right pane, then hover on the icon at the top of the thumbnail list and click **create new registration group**

The new registration group is made active in the left-pane.

When you create registration groups, they can be made active by selecting them in the thumbnail list in either pane. You can merge registration groups by matching one scan from each group together.

Note: The 'unregistered scans' group can only be displayed in the right pane.

13. In the right-pane, select **techshop_010**, which is another scan that was taken in the back room near **techshop_009**. Using your preferred registration method, connect the two scans.

14. In the left-pane, make **registration group 1** active; in the right-pane, make **registration group 2** active, then match a scan from each group to merge the groups.
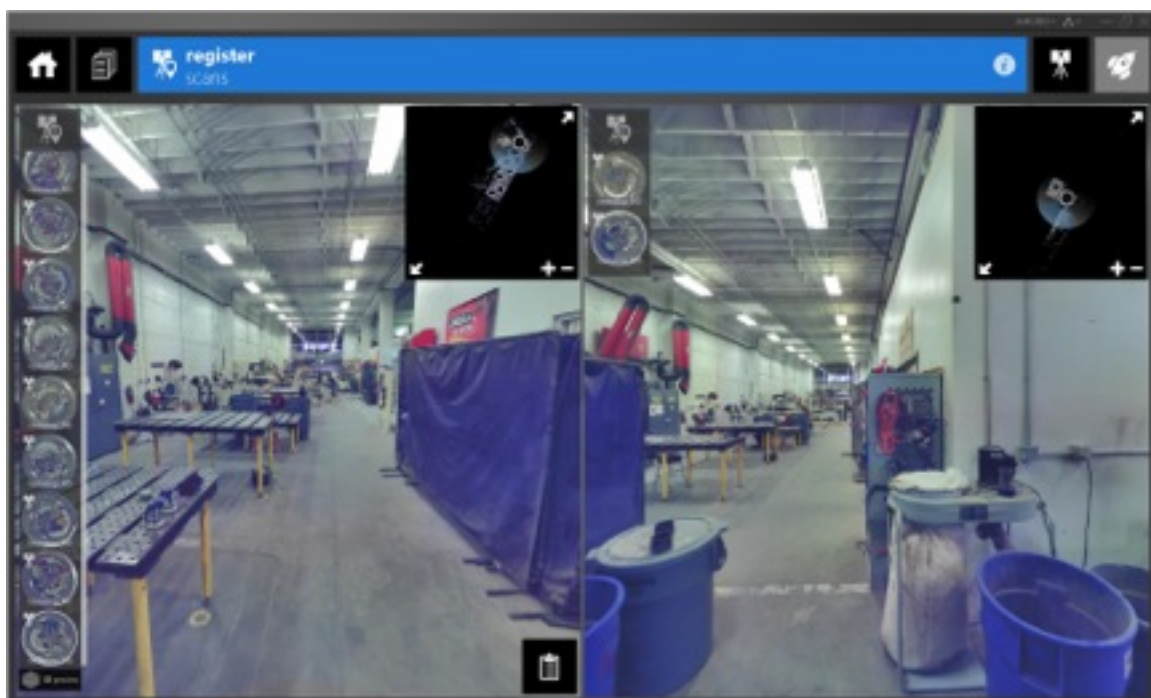
15. Once you have registered all of your scans, you have one more chance to review your scans before starting the indexing process.
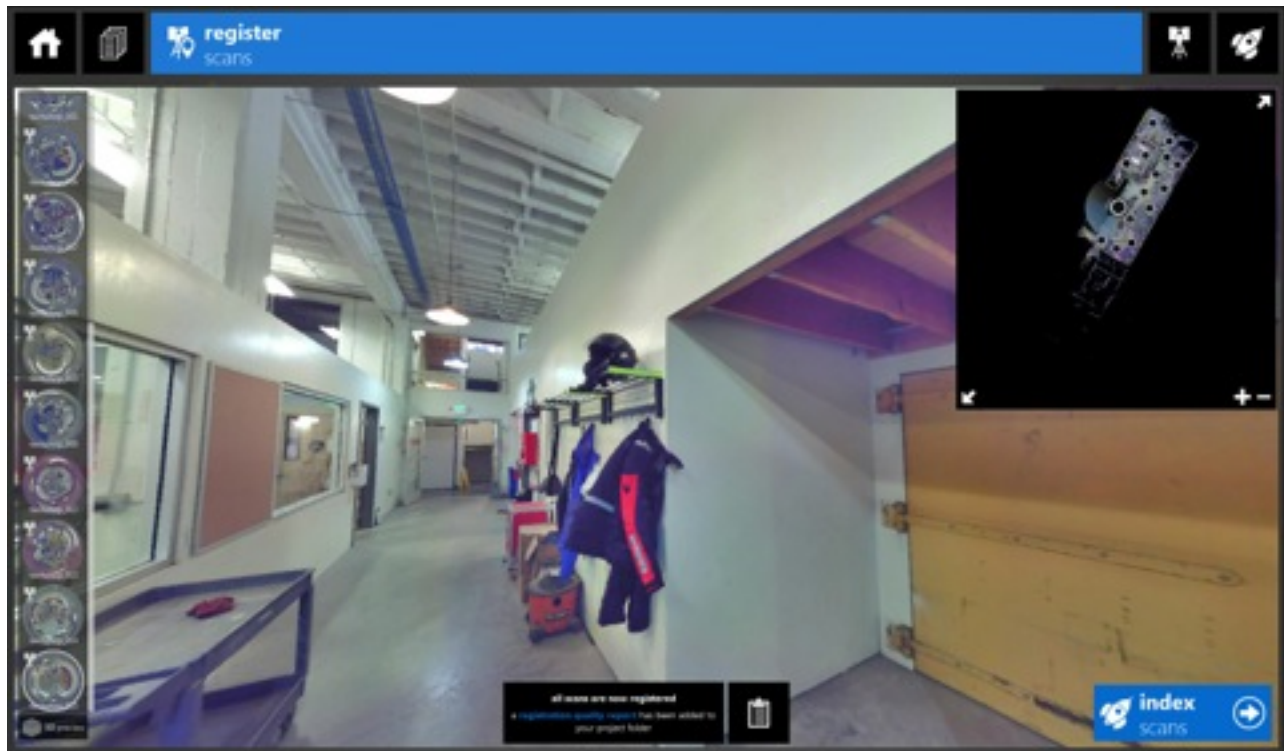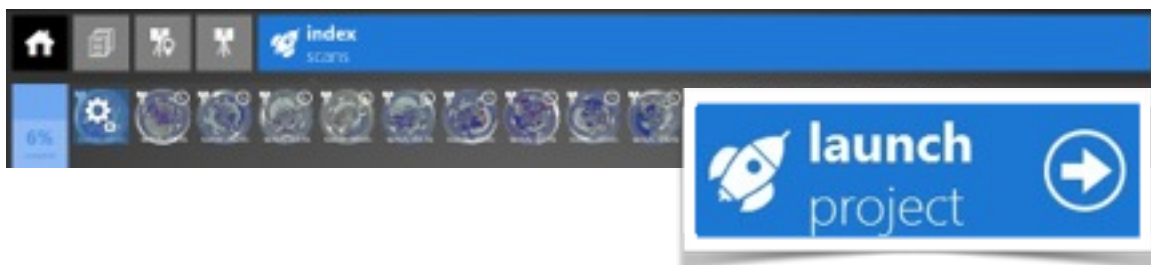

Hover on the **data report** icon to see a list of all scans and their registration numbers; you can click on each column to re-sort the list.

16. Click **index scans** to start the indexing process.

17. Once the first scan has completed indexing, click **launch project** to open your project.

As the remaining scans are indexed they will automatically be added to the view.