

think[box]
3D Scanner (Leo Scanner)
Tutorial: Using The Leo Scanner

Introduction

The Artec Leo Scanner is a wireless handheld structured-light 3D scanning device. It uses projected light patterns and a camera system to measure the three-dimensional shape of an object.

Preparing your object to scan

Shiny Surfaces: Shiny, dark, and see-through surfaces usually do not scan well, because they cannot be “seen” or interpreted correctly by the scanner.

If the object has any shiny, black, transparent surfaces, ask a student technician to get you **talc spray** from the Red Flammables cabinet in the Dirty room. You will need to coat your object in the Paint Room on Floor 5.

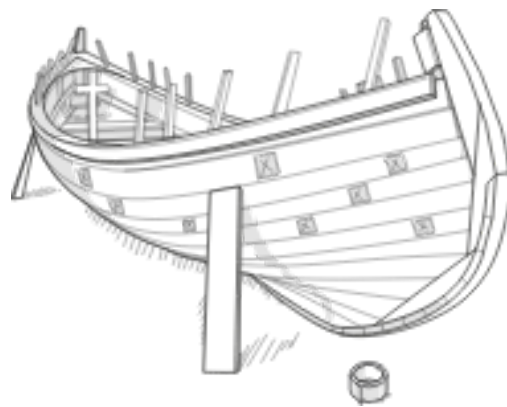
Avoid smaller objects because they are more difficult to scan with the Leo Scanner. You might have better results with the [Romer Scan Arm](#) available on Floor 3 of think[box].



Repetitive Geometry, Patterns, and Pieces:
a

Use visual markers on or around your object to help you and the scanner to distinguish the different parts of the object when scanning and processing.

You can make these out of stickers, small pieces of tape, or posts.



Ask a student technician to unlock the 3D Scanner Workstation cabinet in the Floor 3 Photo Area for you. The Leo Scanner is kept in its case with a charger and an ethernet cable for use with [Artec Studio 16](#).

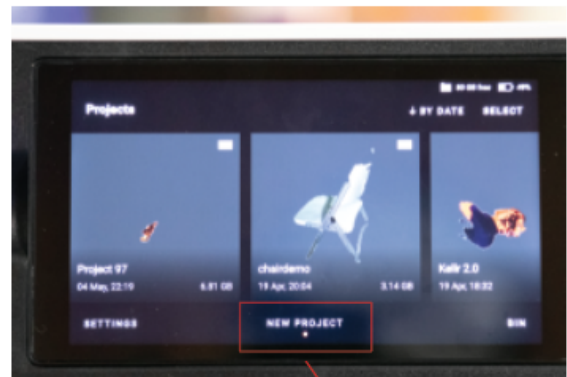


Starting a New Project

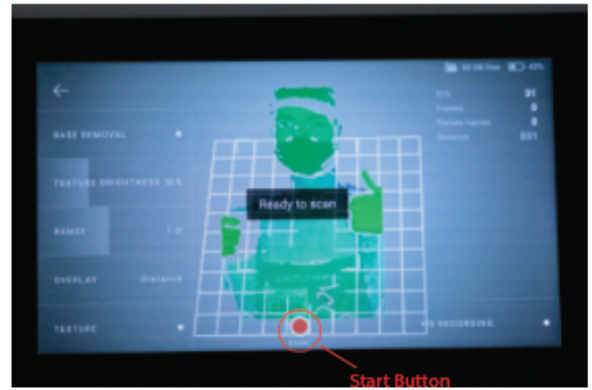
Push and release the power button on the scanner to turn it on.



Click on **“New Project”** OR Click the **red trigger button** on the handle of the scanner.

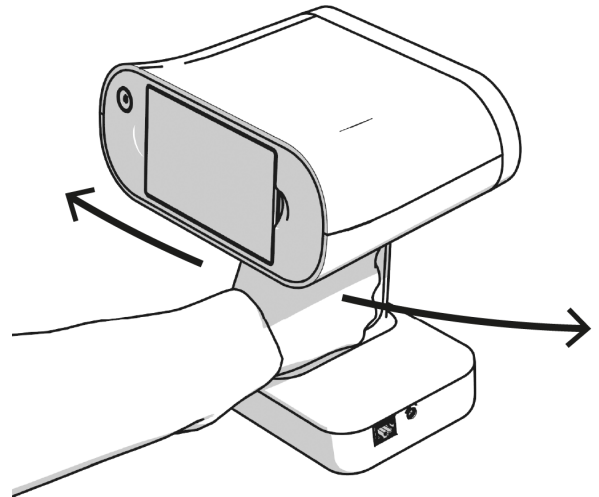


Click on “**Start**” or the **red trigger button** to start your scan.

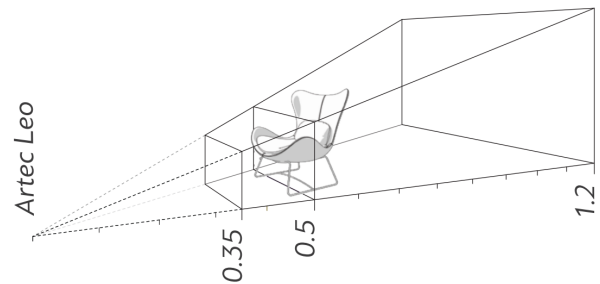


Firmly hold the scanner by its handle.

Use another hand to support the base if needed.

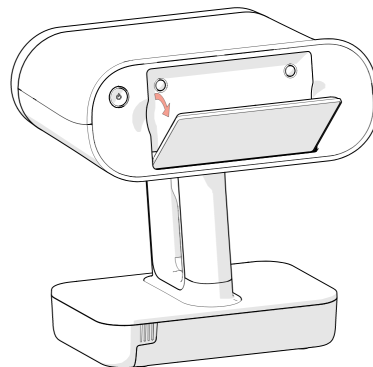


Hold the scanner approximately **1.5 feet**, or **0.5m** away from the object being scanned.

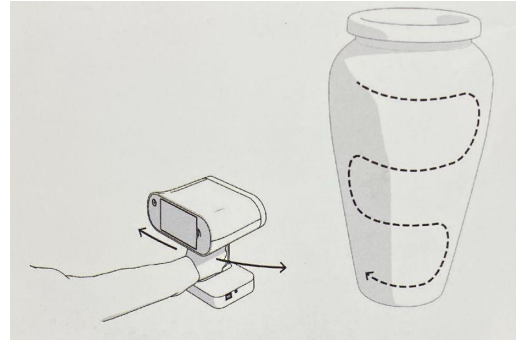


Watch the scan develop on the screen, rather than watching the object as you scan. This will give you more accurate scans.

You can **tilt the screen** on the Leo to make this easier.



Move the scanner in a sweeping motion as you are trying to capture the entire surface area of the object.



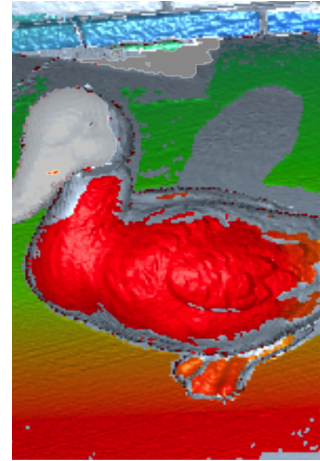
The display shows your object and its surroundings in multiple colors while scanning.

The colors are indicators of your scan's quality and are usually based on the distance that you were from the object when scanning.

In general:

- **Green = Good.**
- **Red = Bad**
- **Gray = Uncaptured Data**

*****See the chart at the end of this document for more information about how to improve your scan based on these indicators.**



After scanning, click the trigger button again to end the scan.

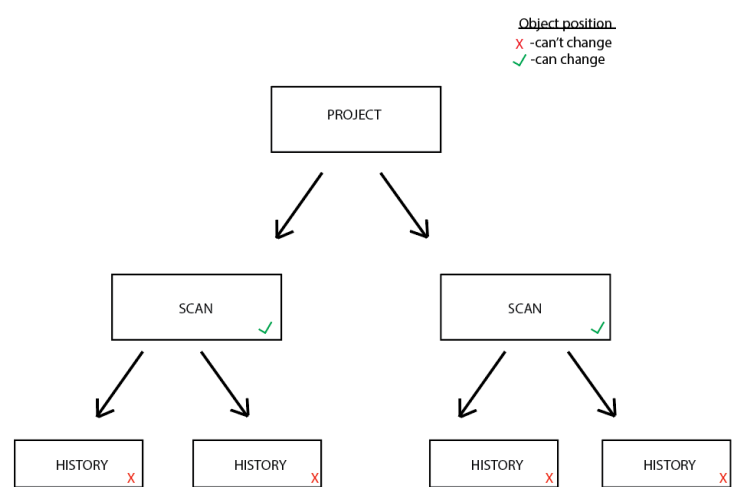


Each project can have multiple **scans**. To add a scan, tap “Project” in the top left corner of your project. Then tap “Add Scan” and press the trigger button to start a new scan within your project. You can orient the object differently for each new scan, but it **MUST** be the same for an ongoing scan.

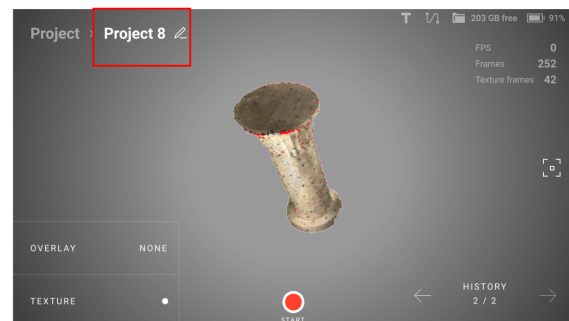
You can also pause and resume midway through your scan. This creates a **history** within your scan. Press the trigger button during a scan to end a history, and when you press play again, a new history is created.

NOTE: The scanner can lose track of the object being scanned and end the current history. If that happens **leave the object in the same position**, follow the instructions on the screen and press the trigger button to continue scanning.

The chart to the right describes in which phases you can and can’t make changes to the object’s orientation or position. **Alter your object between scans, NOT between histories!**



When you are finished with your scans, tap on the Project name in the scan-viewing display, or click on the Edit icon at the end of the name field, to change the name of your project.



Push and release the power button once to exit the scan. Push it again to exit the project. (The power button also acts as a back button.)



After exiting the project, press and release the power button to open the shut down screen. Click on “Shut Down”.

Yay! You are done scanning. Follow the [Artec Studio 16 tutorial](#) to process your scans into a 3D model.



Color	Scan Quality	Distance From Object	Action to be Taken
Gray	No Scan Data is Captured!	Where is it?! You are out of the scanner's current range of sight. Gray means the scanner was not able to get any data based on your current location.	Move closer to the object, or try to capture the object from different angles. Watch out for overhangs, shadows, and complex areas that block other parts of the scan. Keep moving around the object to fill in the gray areas.
Deep Blue to light blue	Very poor scan data is captured.	Too Far! You are likely more than 1m from the object/the portion of the scan.	Move closer to the object/the portion of the object that is showing up as blue.
Green	Well-scanned area, has perfect scan data	Just Right! 0.45-0.85m	Keep going!
Yellow to Orange	A bit close, but Satisfactory , has enough scan data	0.4m	Move further away from the object. Scan the orange area of the object slower . Scan the orange area from different angles .
Red	Poor , needs more scan data	Too Close! 0.35m or closer- you are too close to the object/the portion of the object you are trying to scan.	Move further away from the object. Scan the red area of the object slower . Scan the red area from different angles .