ICAVE

Service Documentation: ART (Advanced Realtime Tracking) System

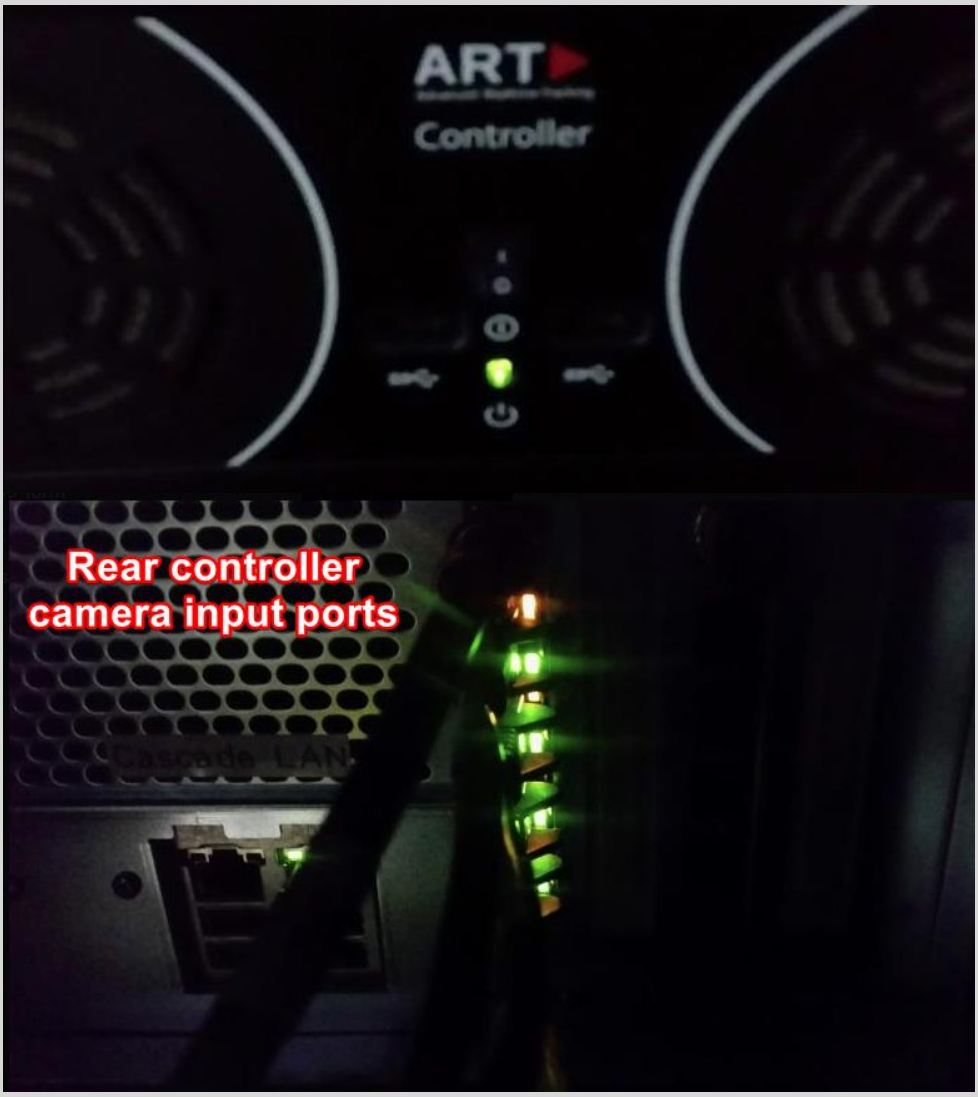
Last Updated: 10-26-2020

Summary: The following provides documentation for properly servicing the ART tracking calibration used by the ICAVE for its real-time tracking functionality. A breakdown of the current setup will be provided along with the software configuration for the ART tracking software.

Breakdown:

The ART system has a main hardware controller on the server rack of the ICAVE. Four trackers sit above the 5 projector screens and are routed to ethernet ports behind the controller.

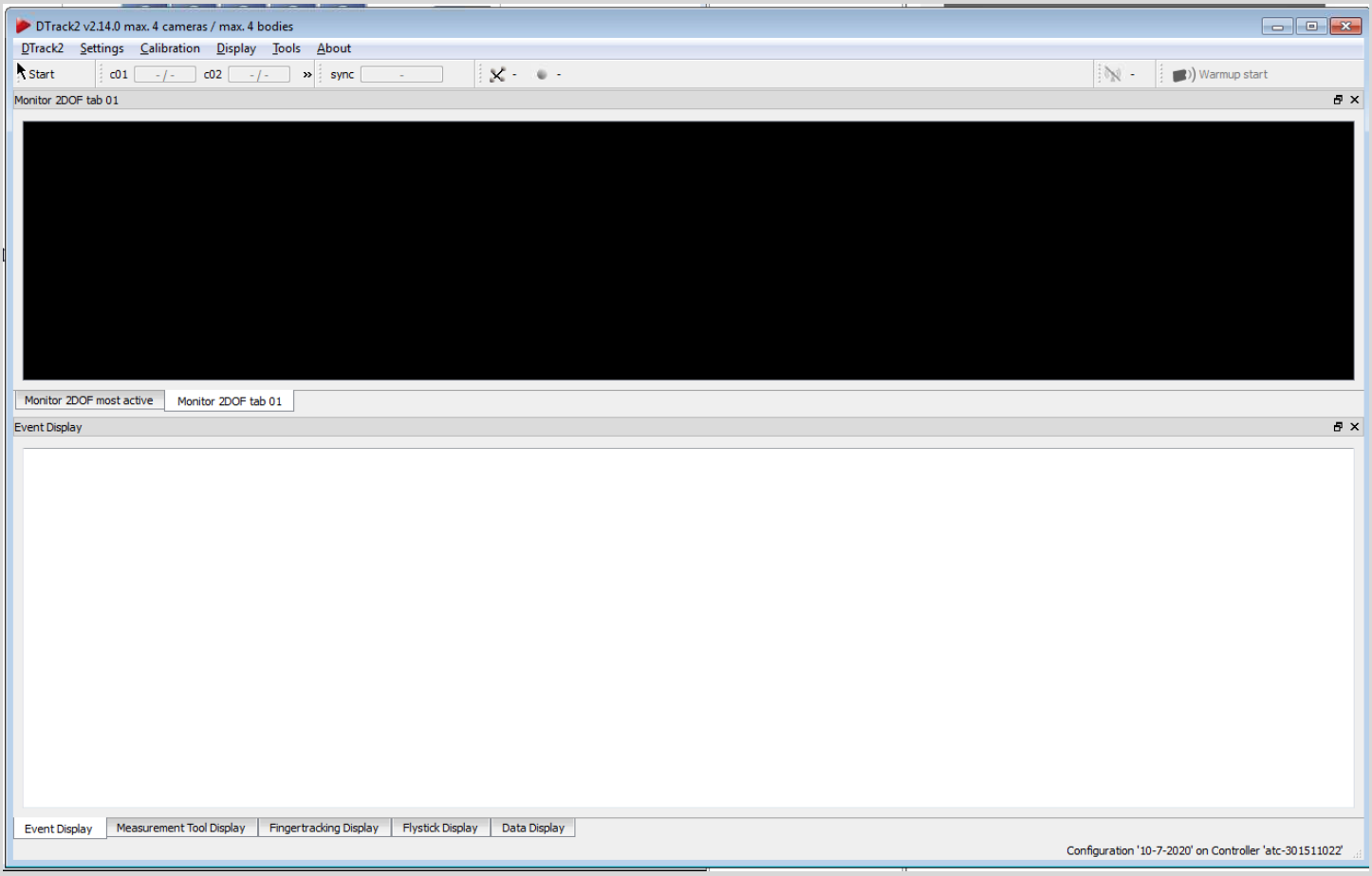
ART Controller:



(Need picture of the tracking sensors)

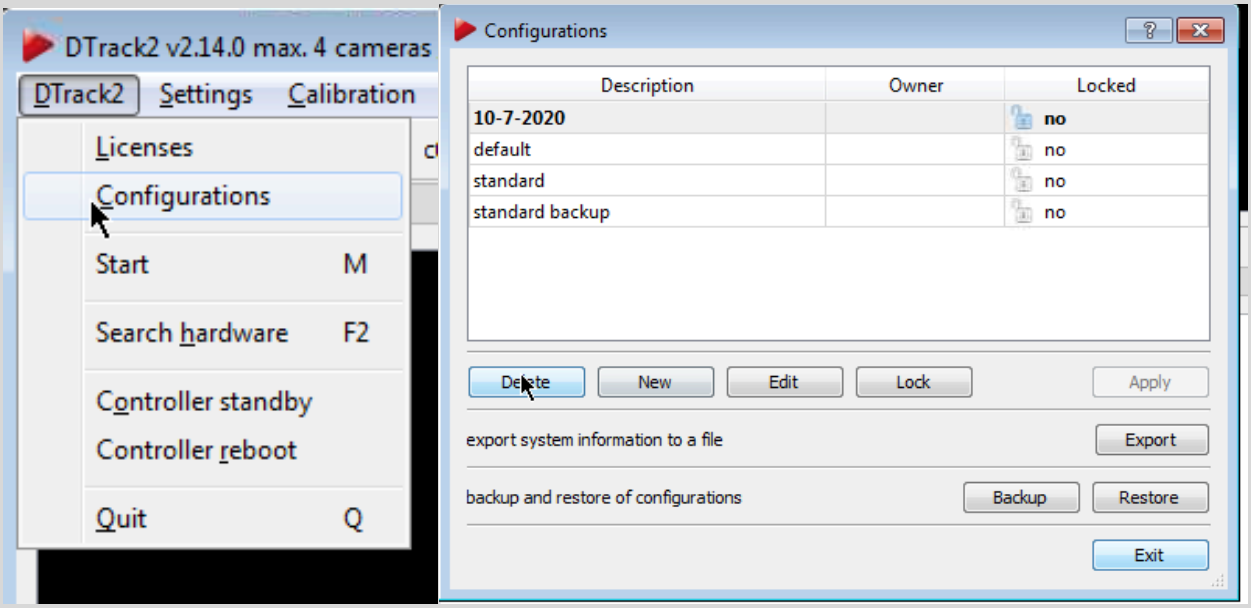
The ART controller is connected to the Head Node where its managed by DTrack2.

DTrack 2: Software manager for the ART controller. Allows configuration and calibration management of the tracking system.



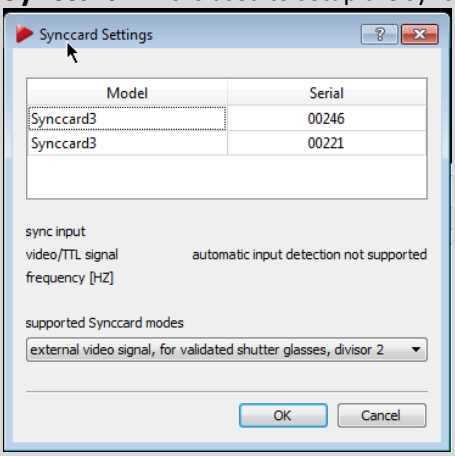
Note: DTrack3 is available.

Configuration: These are settings presets for the system that can be accessed from the DTrack2 menu dropdown:



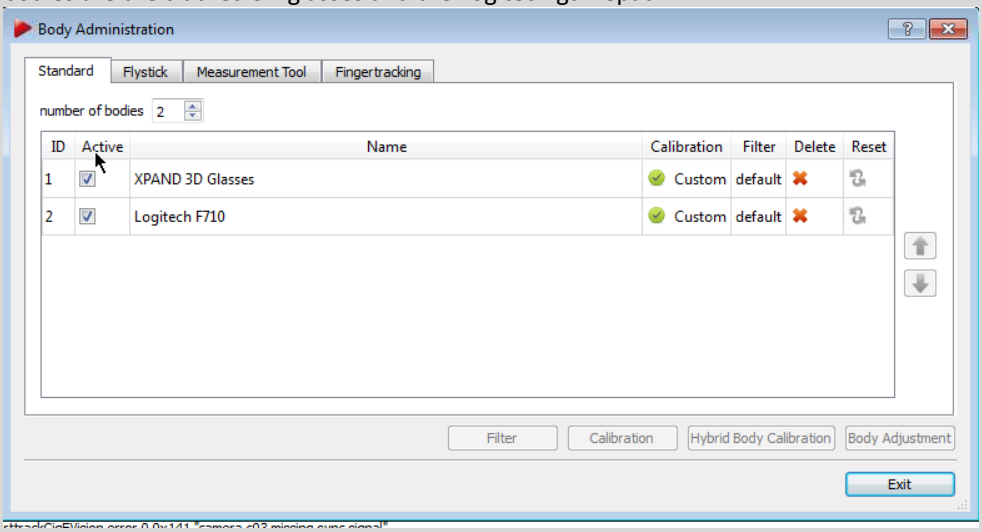
The configuration settings are handled by the settings dropdown: These for the most part are left unchanged from the default configuration. These exceptions are as follows:

Synccard: This is used to setup the synching ratio used for the 3D glasses' shutter.

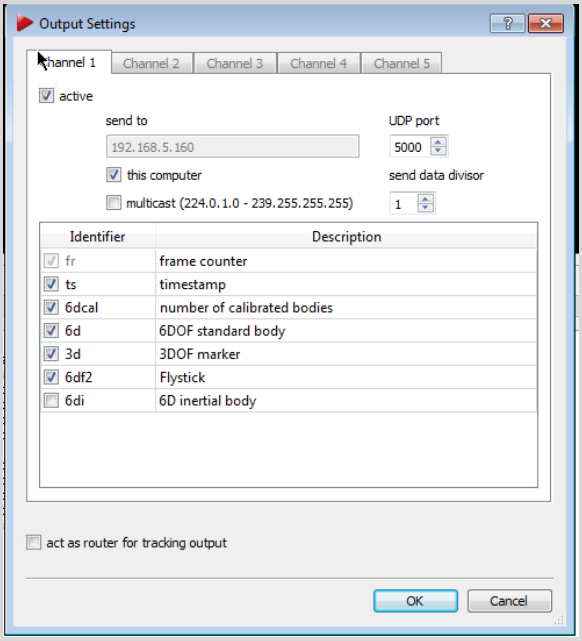


We are using: external video signal, validated shutter glasses, divisor 2

Body Administration: The registered mocap bodies are configured here along with their calibrations. Currently the registered bodies are the tracked 3D glasses and the Logitech gamepad.



Output: Sends the tracking data to a specific output channel. We have set the first channel to active and setting default checked information to the head node which is running DTrack2.

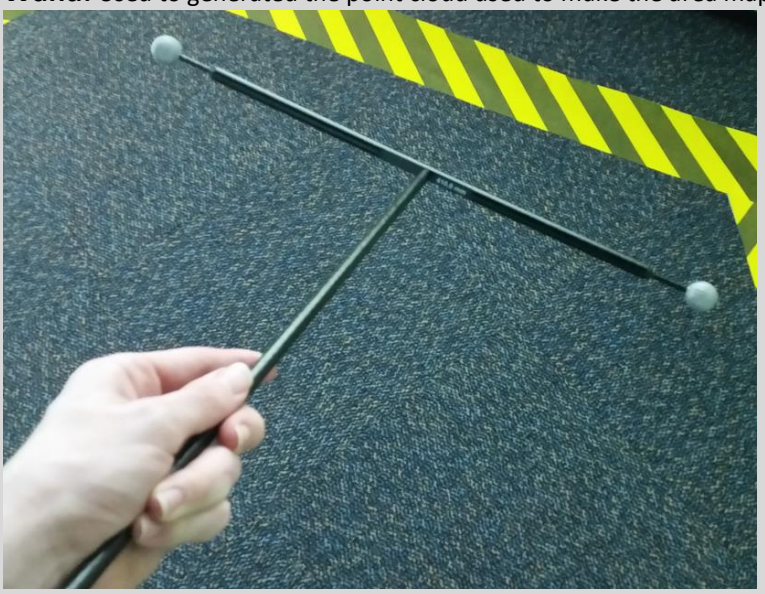


Calibration: The tracking is calibrated using DTrack2 and two calibration instruments: A “wand” and a axis / scale “marker”.

Marker: The marker provides an axis and origin to define the space for the calibration. For the purposes of the ICAVE, it needs to be placed at the center of the space.

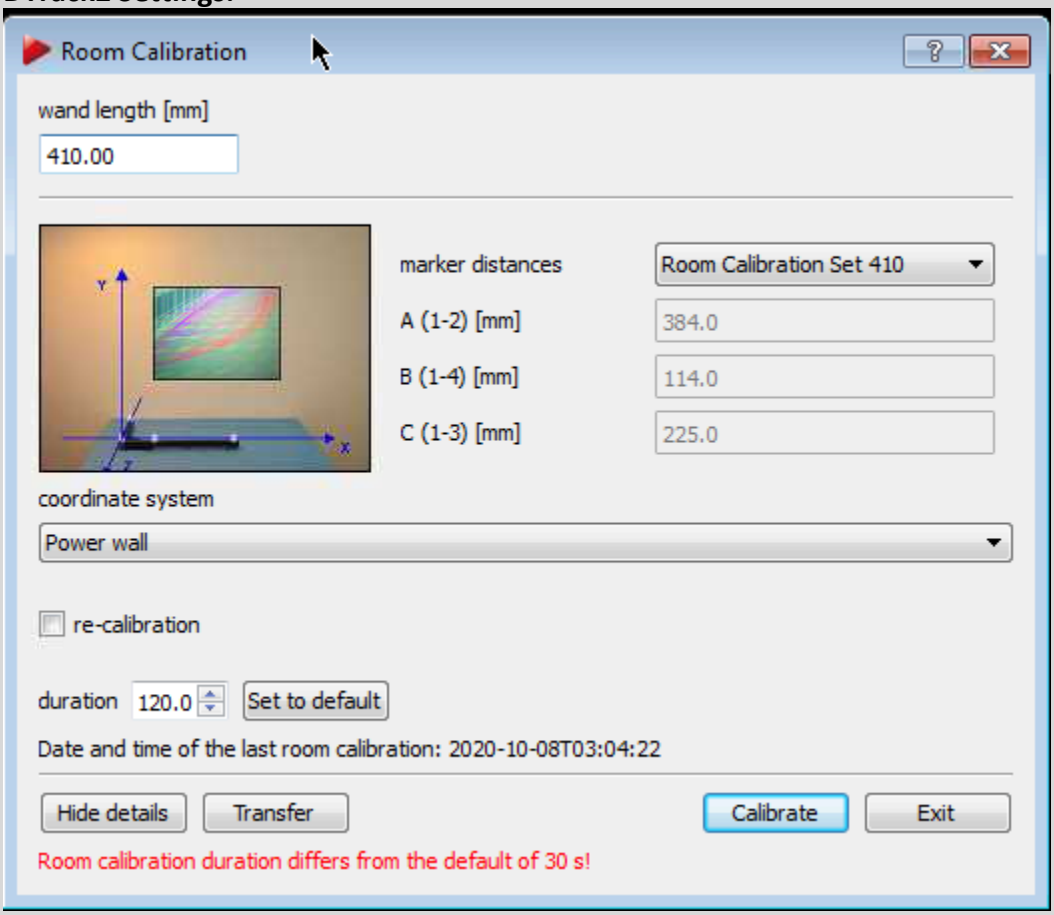
Placement:

Wand: Used to generated the point cloud used to make the area map of the calibrated area.



Room Calibration: The marker distances is set to 410 and the coordinate system specified is power wall, as this is what getReal and track3d use. A duration of 2 minutes is used for the calibration time to ensure nearly full 100% coverage of the calibration.

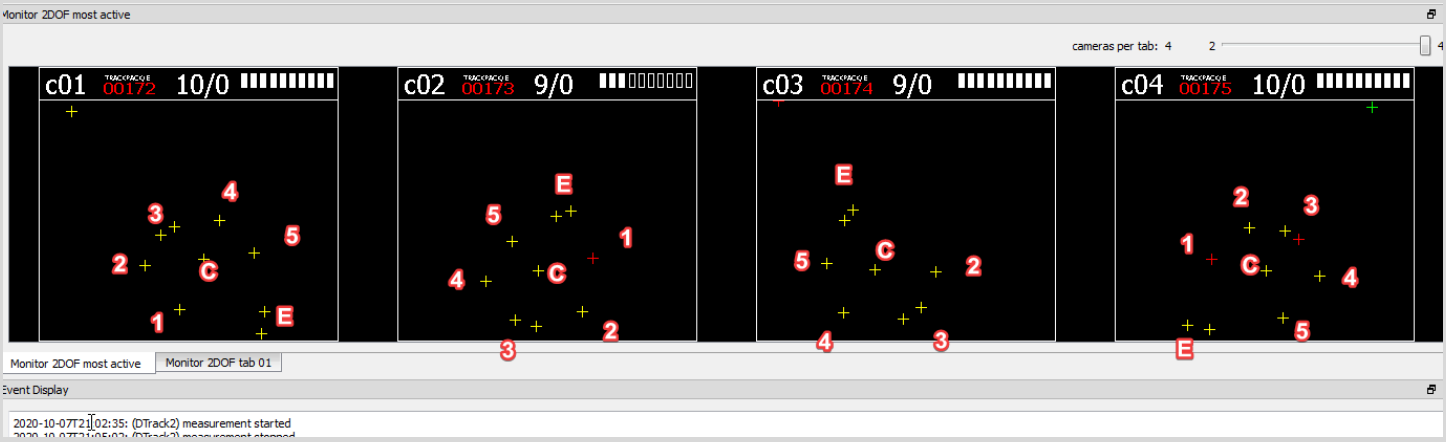
DTrack2 Settings:

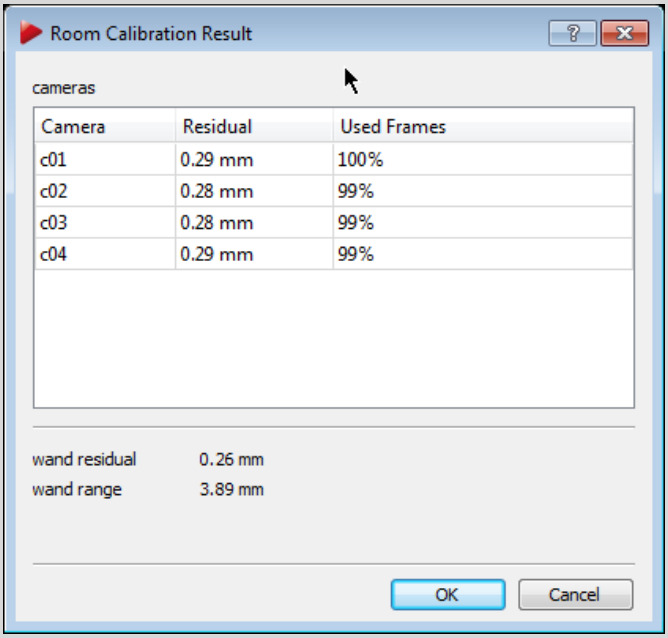


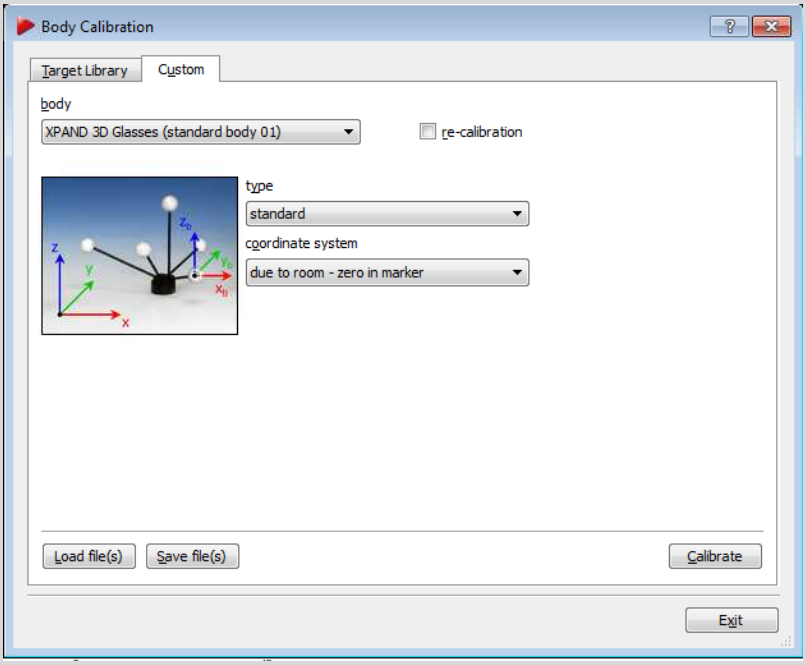
During calibration, a countdown will start, the individual holding the wand must twirl it slowly while traversing the space. Its best to start from the outside perimeter and slowly work your way in circular fashion to the inside.

Results of proper calibration:

Projectors are the numbers 1-5. C represents where the marker was placed. E represents the entrance to the ICAVE.





Body Calibrations: Bodies are calibrated using the Body Calibration window. From there either the glasses or Logitech gamepad are selected for calibration and calibration can be started. To calibrate have the object present within the ICAVE and move it around so that the trackers can observe the body composite of the ball sensors from multiple angles.

Window: