

RT Biofeedback Overview

RT Biofeedback is available only in Visual3D Professional.

This tutorial describes using the built in real time plugins.

Introduction

QTM streams out the data it receives as it processes them. Visual3D can save the streamed frames out to a C3D file, or directly capture a static trial from the data streaming in. In other words, QTM must be running and streaming out identified target information. Visual3D can then connect to the active QTM stream to access that data.

QTM is needed in order to stream data to Visual3D so Visual3D cannot replace QTM. Since QTM gives priority to processing the data from the cameras, under higher frame rates they will sacrifice streaming in favor of processing the camera data, thus frames can be lost when streaming at higher data rates.

QTM needs to be running first and activate “Track each frame in 3D” and “Apply the current AIM models” on the RT processing on the Processing page.

To test the RT output you need to be in preview and have an identified subject in the volume or play a file with the “Run Real-Time Processing on File” option.

It is very important that AIM is working properly in Visual3D and identifying markers. If the markers aren't identified in QTM, Visual3D can not process any realtime data.

Preparing for the Tutorial

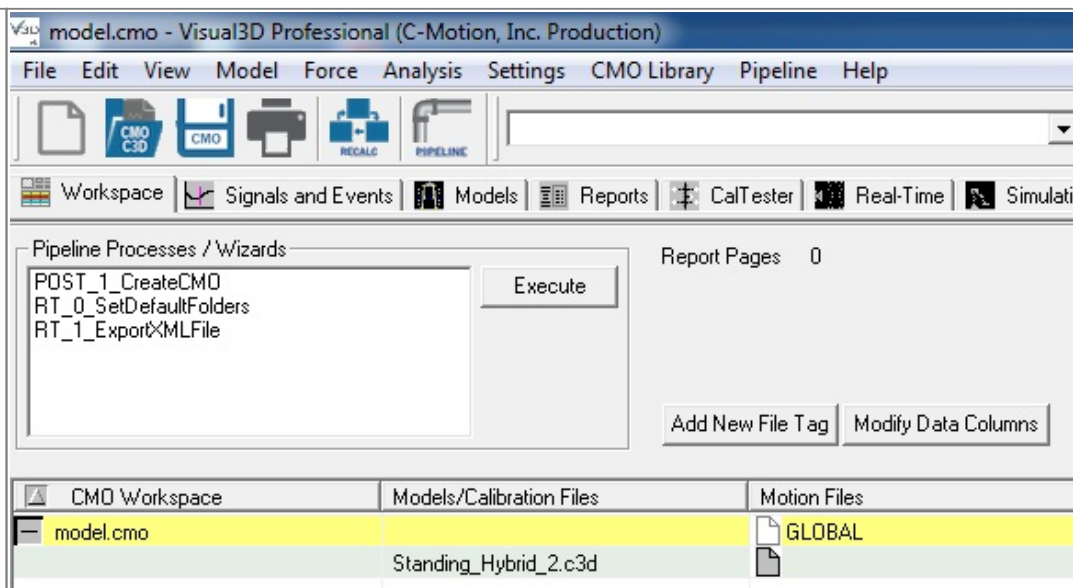
1. Download the file [model.zip](#)
1. Save the file where you would normally save motion capture files.

These sample Qualysis files were downloaded from [C3D.org](#)

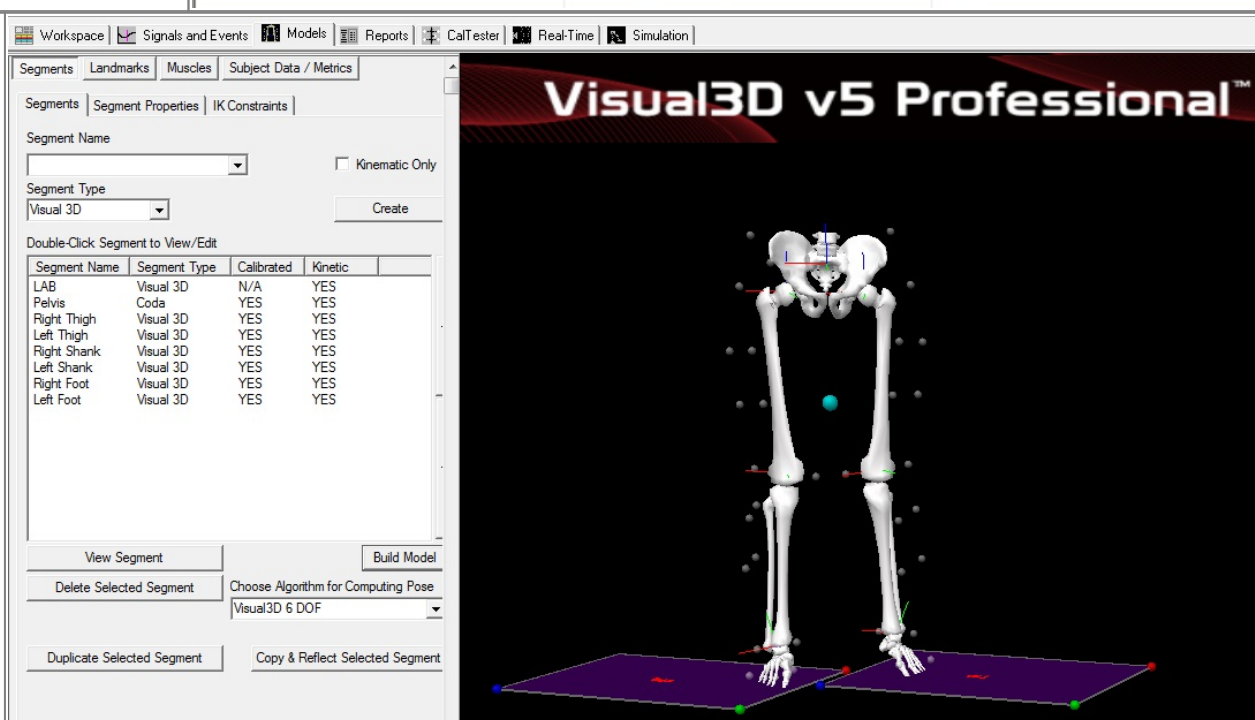
Step 1 - Open CMO File

1. From the File menu, select **Open/Add...**, Choose *model.cmo*

2. From the workspace status screen, verify the model file named *Standing_Hybrid_2.c3d* appears in the column labeled Models/Calibration Files.



3. Switch to the **Models** tab to verify bones in picture



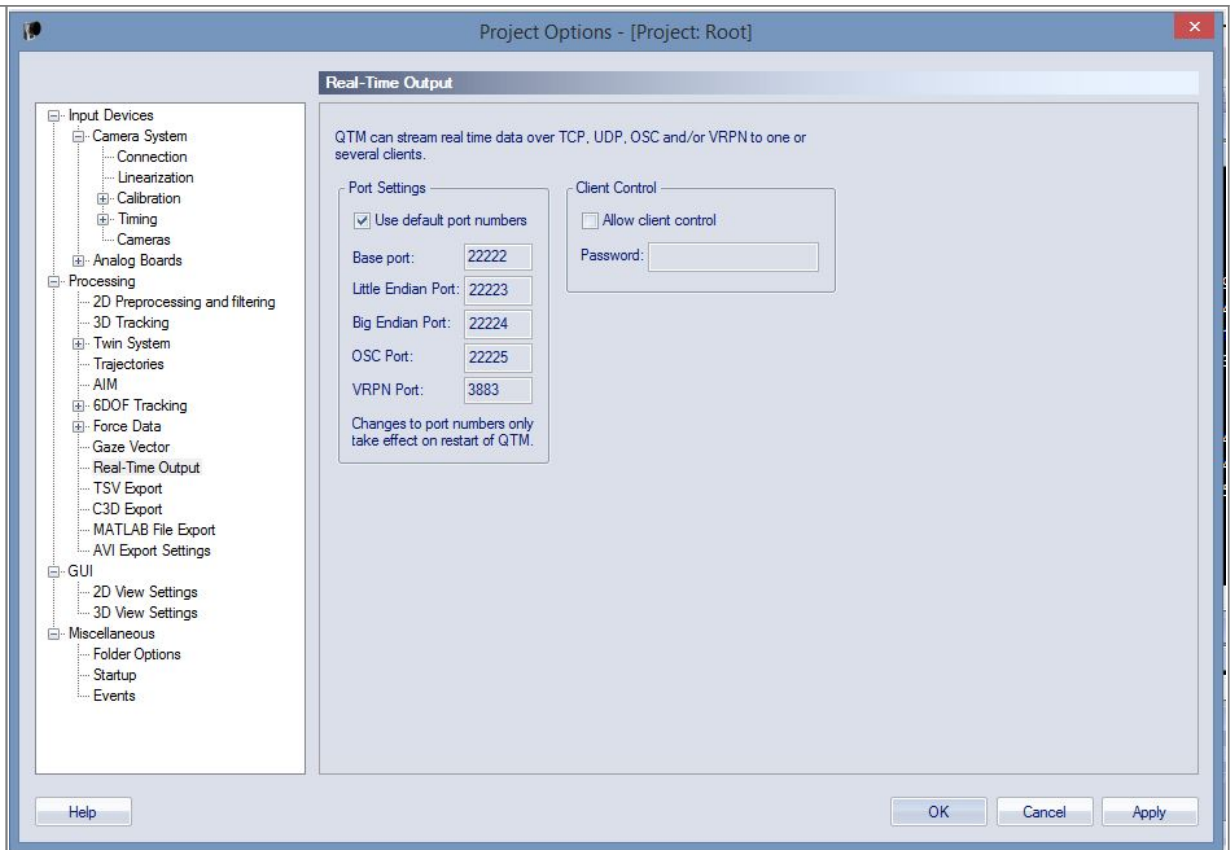
Step 2 - Connect to RT stream/Load Emulation

1. Open the *Real-Time* tab

2. **A.** To connect to the Qualysis real time stream:

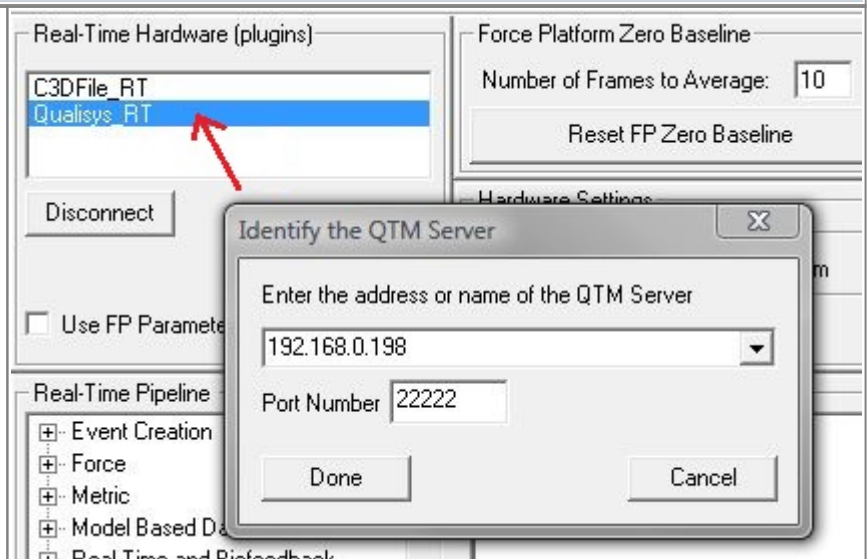
* Ensure QTM is running and set the RT Output

To test Open a QTM file, capture and play the file in QTM via post processing keep it running



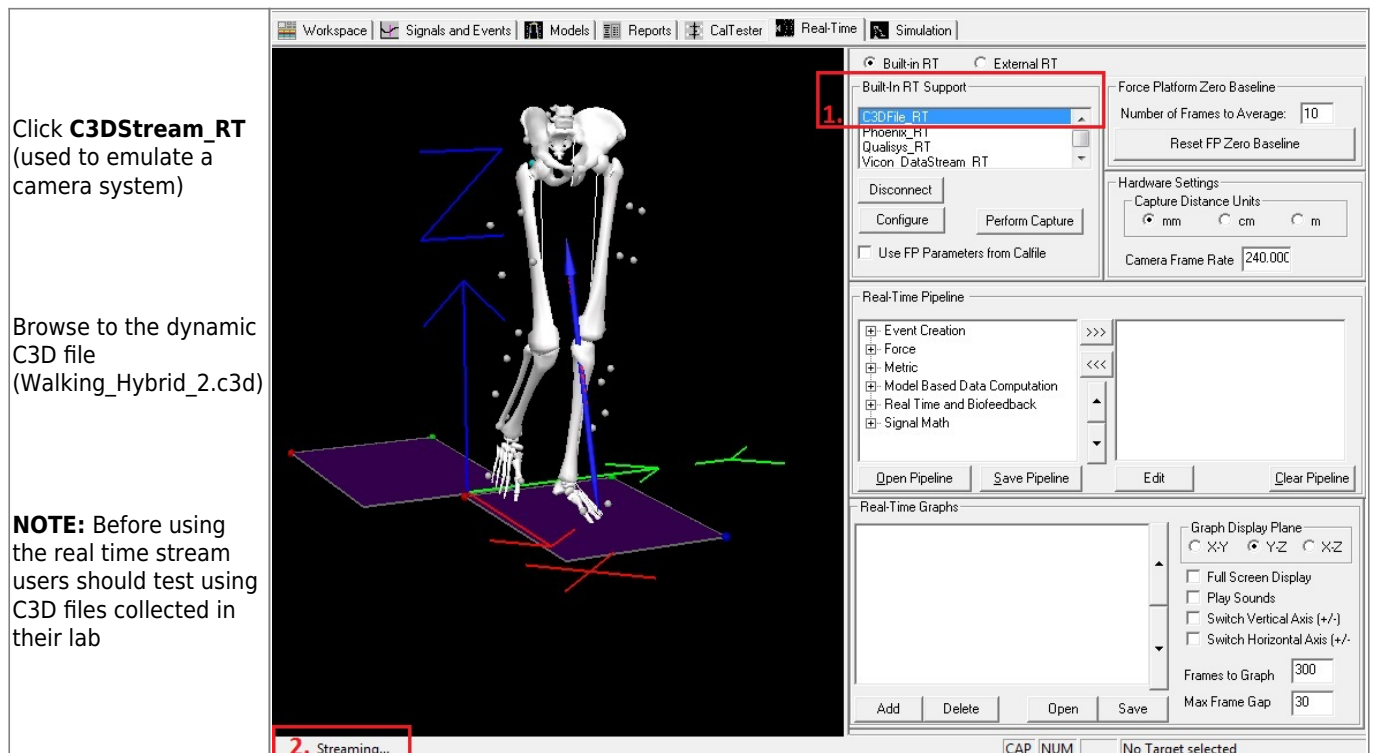
* Click **Qualisys_RT** under **Real-Time Hardware(plugins)** to connect to a Real Time stream (from mocap system)

* Enter the correct IP address for the computer streaming real time. If they are on the same computer, enter 127.0.0.1 to indicate local host.



****2. STOP NOW.** This tutorial is just a wiki and cannot connect to your QTM system. So, we will now simulate the RT stream by using a C3D file as input instead. So, disconnect from the QTM system, and use the C3D_Streaming plugin instead. To connect to the C3D stream:

**



3. The data is automatically applied to the model

Note: Streaming status in lower left

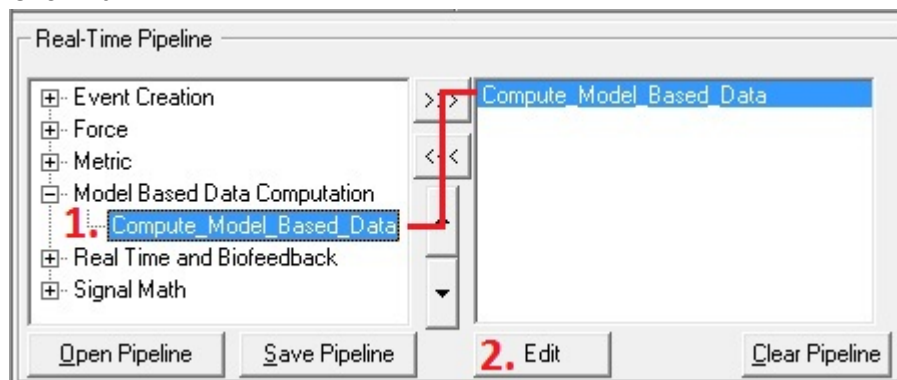
Step 3 - Compute model based item: RT pipeline

The RT Pipeline is available only in Visual3D Professional

Open up *Model Based Data Computation* under the **Real-Time Pipeline**

Double click *Compute_Model_Based_Data*

Click **Edit**



Change the corresponding:

Data Name: Ankle **Folder:** ORIGINAL **Model Based Item Properties:** JOINT_ANGLE
Segment: Right Foot **Reference Segment:** Right Shank

Compute Model Based Data

Data Name: Ankle

Folder: ORIGINAL

Result Folder will always be Original

Joint Angle (degrees):

Segment and Reference Segment define the angle desired.
Normalization is relative to standing posture.
The Cardan Sequence defines the order of rotations.
Warning!!! If you are using the anatomical axes (ML, AP, or AXIAL) the sign of the angle follows the Right Hand Rule about the actual corresponding segment coordinate system axes.

Model Based Item Properties

JOINT_ANGLE

Negate

☐ X

☐ Y

☐ Z

Normalization

Normalization Off

Segment: Right Foot

Reference Segment: Right Shank

Cardan Sequence: X-Y-Z

Done Reset Dialog Cancel

Click **Done**

Step 4 - Create Graph

Click **Add** in the **Real-Time Graphs** section, and enter the following:

Data to: LINK_MODEL_BASED::ORIGINAL::Ankle

Add/Modify Real-Time Feedback

Graph Type

No Graph2D GraphBar Chart

Data to

1. LINK_MODEL_BASED::ORIGINAL::Ankle

Component

X

Line Color

White

☐ Graph P2D StdDev Component

Graph Position

Column: 1

Span 1

Row: 1

Span 1

☒ Automatically Scale to Signal Min/Max
 ☐ Scale Graph to User Defined Min/Max

☐ Highlight Target Range

0 +_ 0

☐ Highlight Metric Mean
 ☐ Highlight Metric StdDev

Event Handling

☐ Anchor Graph Start Frame on Event
 ☐ Anchor Graph Stop Frame on Event
 ☐ Update Graph Every Nth Cycle

1

Number of Cycles to Display

4

Select Events to Annotate

Warning Data Color. NOTE: If 'Less Than' equals 'Greater Than' then there is no warning given.

	Less Than	Greater Than	Also Change Background Color to
Warn Yellow When:	0	0	Default
Warn Red When:	0	0	Default
Warn Sound When:	0	0	Default

☒ Only Graph
 ☐ Graph Border

Sound File (Less than)

Sound File (Greater Than)

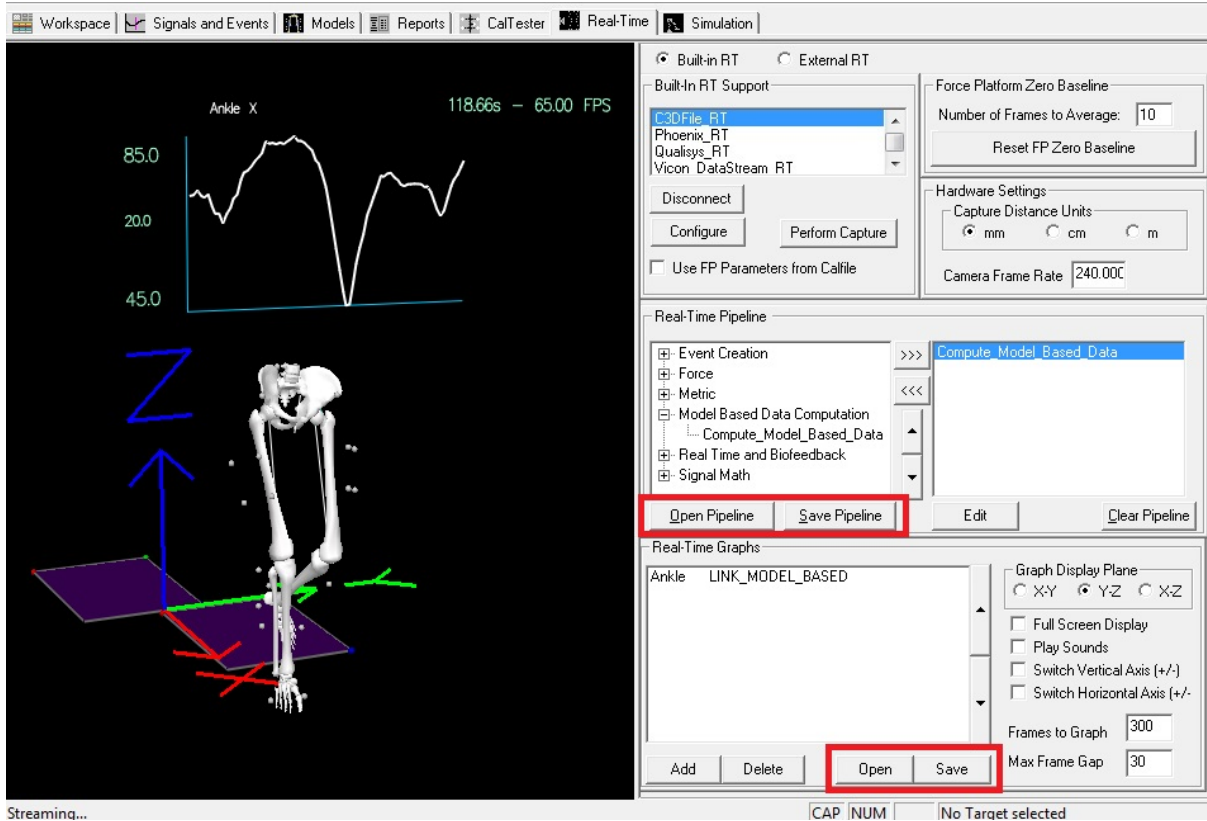
2. OK

Cancel

Click **OK**

Complete

Your result should show a Real-Time stream that looks like the picture below



Remember to save the Graph and RT Pipeline

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<https://has-motion.com/wiki/> - Wiki Documentation Site

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Last update: 2024/07/17 15:42

