Visual3D is updated many times a year and we always recommend staying up-to-date so that you have access to the latest features and bug fixes. These release notes provide a summary of changes for releases since the major v2022.08 release.

Major v2022.08.1 release

- Multisubject support in C3D files using the subject prefix parameters (prefixes are provided by mocap systems).
- Single subject processing is unaffected by this feature, so prefixes are not necessary for that.
- Automatically adds subject prefix to marker labels landmarks and segments in Model Templates.
- Allows multiple subjects in the same movement trial to be processed (identified by the unique prefixes used).
- Allows multiple static calibration trials to be used for applying to movement trials. Handles each subject separately for computing means, normal data, metrics, etc. when working with the CMZ Library. Previously V3D required 1 subject per CMO/CMZ file.
- Allows subject tagging in the model to allow setting the active subject tag (in Set_Active_File) which lets pipelines process different types of subjects differently (ie; BATTER, PITCHER, etc. tags, generically applied to any specific subject prefix).
- Nearly every pipeline command modified to support active subjects and processing subjects separately.
- Additional support for markerless data, including model building and processing for Theia3D markerless files.
- Bug fixes and performance tweaks throughout.
- RT Plugin updates for compatibility with manufacturer software updates
- Numerous usability and UI enhancements throughout.

For an in-depth discussion on how Visual3D provides multisubject support for C3D files with subject prefixes, go here.

Recent Updates (2024)

Updates for 2024.06.1

- [Feature] Added a new model based item for JOINT_QUATERNION.
- [Enhancement] Added an option to specify an Event_Sequence for drawing target/landmark trails in the 3D viewer
- [Bug Fix] The user specified color of force platforms was not used when the user selected a custom background colour
- [Bug Fix] Evaluate_Expression function Gravity_Vector did not return a value

Updates for 2024.05.3

- [Enhancement] Added a new reserved character for the space character in file and signal names related to Qualisys PAF applications.

Updates for 2024.05.2

- [Bug Fix] Modified naming convention related to Qualisys PAF applications.

Updates for 2024.05.1

- [Enhancement] Added the ability to define the scale, position, and size of the floor in the 3D viewer. This allows viewers to define a ground that is sloped (i.e. a pitching mound). The transformation is stored in the cmz file allowing individual cmz files to have unique “floors”
- [Enhancement] Extended the implementation of a shadow segment. For Theia and XSens data, shadow segments are added automatically to the model for the thorax and feet
- [Enhancement] Extended the implementation of the automatic model for XSens mvnx files. No longer is the model implicitly defined in VIsual3D. 4×4 Rotation matrices are created automatically from the mvnx file, allowing the user the ability to modify individual segments in the model, and to more easily adapt segments.
- [Enhancement] Added more functionality to the Manage_Theia3D_Merge command that permits intermediate pipelines in the process
- [Bug Fix] Fixed several minor issues related to multiple subjects/multiple models in a workspace
- [Bug Fix] Many small bug fixes

Updates for 2024.03.3

- [Bug Fix] Fixed a problem where a shadow segment would not work properly when part of an IK chain.
- [Bug Fix] Fixed an issue where the reference object for a shadow segment was not being set correctly.

Updates for 2024.03.2

- [Bug Fix] Fixed a problem with legacy pipeline command parameters for the Manage_Theia3D_Merge pipeline command.
- [Bug Fix] Fixed atan2 expression to ensure that it sets the derived signal's data rate.
- [Bug Fix] In calculating functional joints, added a guard against the case where a Target has more frames than the C3D parameters specified.

Updates in 2024.03.1

- [Enhancement] Added ways for the user to specify their file structure when using the Manage_Theia3D_Merge pipeline command.

Updates in v2024.02.2

- [Bug Fix] Fixed a backwards compatibility issue for the Manage_Theia3D_Merge pipeline command's parameters.

Updates in v2024.02.1

- [Enhancement] Added support for Theia3D versions that export Theia Model 10 or higher
- [Bug Fix] Modified FP_Auto_Baseline for an unusually light subject
- [Enhancement] Modified Shadow Segment functionality

Updates in 2023

Updates in v2023.12.1

- [Bug Fix] Fix FP_Auto_Baseline for unusual customer force platform and subject weight which used incorrect representative zero frame
- [Bug Fix] Fix query using the CMZ/CMO Library
- [Bug Fix] Fix C3D file read for old NDI files
- [Enhancement] Support other signals in Real-Time for Compute_Planar_Angle
- [Bug Fix] Fix Real-Time image switching when streaming a short C3D File.

Updates in v2023.11.2

- [Bug Fix] Fix regression in subject metrics which can cause the first 5 metrics read from .cmz file to not be calculated properly.

Updates in v2023.11.1

- [Enhancement] Performance improvements in computing pose and landmarks
- [Enhancmnt] Add new segment type Shadow Segment which shadows another segment
- [Enhancement] Add expression function to convert data To_String(…)
- [Bug Fix] Report Subject item overlapped diagnosis on the wrong line
- [Bug Fix] Metric_Signal_Value_At_Event incorrectly did not process the instance parameter
- [Bug Fix] Fix numeric string identification which incorrectly identified certain strings as numeric

Updates in v2023.10.2

- [Usability] Prompt user if they are creating a segment for ALL_SUBJECTS when there is more than one subject to ensure they intended to do that.
- [Bug Fix] Fix for memory issue occasionally on start of Visual3D.
- [Bug Fix] Fix graphing mean and stddev when graphing subjects.
- [Bug Fix] Fix out of order secondary model building in certain curcumstances.
- [Bug Fix] Fix for crash reading library (.cmx) files when .cmz files are very large. Requires re-indexing library if you have problems crashing because .cmz files are too large. This should be a rare problem browsing the library.
- [Bug Fix] Additional fix for Spline function when the entire signal being used for Spline is No_Data.
- [Bug Fix] Allow Temporal Distance metrics when there are no models assigned to the motion file, but events are present.
- [Bug Fix] Fix numeric check which allowed 2023.10.2 to be incorrectly interpreted as numeric instead of string.

Updates in v2023.10.1

- [Bug Fix] Fix Spline function in expressions that caused incorrect No_Data data point at the end of the signal. Also fix Spline when signal contains No_Data in the middle of the signal.
- [Bug Fix] Fix commands using 'Left' and 'Right' to be calculated such as in Metric_Signal_Stats.
- [Enhancement] Speed up editing large scripts that were very slow in the pipeline editor.
- [Bug Fix] Fix Graphing where lines were not being set to bold.

Updates in v2023.09.3

- [Bug Fix] Revert code included in expression memory blow up fix which was incorrectly constructed and not part of the actual memory issue fixed in 2023.07.1

Updates in v2023.09.2

- [Bug Fix] Fix commands needing signal components
- [Bug Fix] Export to Ascii fix for empty strings
- [Enhancement] Compute Link Model Based dialog tweak

Updates in v2023.09.1

- [Bug Fix] Revert Export to Ascii signal ordering for consistency of columns with previous releases.
- [Bug Fix] Minor fix in FP Auto Baseline which is a very insignificant change in baseline result.
- [Bug Fix] Fix commands needing signal components - errors stemming from getting signal parameters internally.

Updates in v2023.08.6

- [Bug Fix] Reports Lines would not show up in bold in the viewer, but would when printing.
- [Bug Fix] Fixed a few bugs related to ExportToAscii, adding muscles, and several other minor fixes.

Updates in v2023.08.5

- [Bug Fix] Fix parsing parameters in command Metric_To_Fit_Signal_To_Line
- [Bug Fix] Fix bug reading VRML file

Updates in v2023.08.4

- [Feature] Add option for Export_To_Matfile, Export_Polygon_C3D_File to allow creation of output folder.
- [Bug Fix] Fix parameter parsing of signals for Set_Data_To_New_Value and Command_Metric_Trajectory_Ellipse

Updates in v2023.08.3

- [Bug Fix] Fix parsing of resulting metric folder when PROCESSED is not used.

Updates in v2023.08.2

- [Bug Fix] Fix crash caused by parsing error looping

Updates in v2023.08.1

- [Bug Fix] Fix crash and processing error in command Metric_Signal_Value_At_Event

Updates in v2023.07.2

- [Bug Fix] Fix Real-Time sounds for sound files, as well as yellow/red warning graphs for 2D graphs

Updates in v2023.07.1

- [Enhancement] Add exclude event handling to Temporal and Distance calculations
- [Enhancement] Add ability to graph only X, Y and Z for target data
- [Enhancement] Add ability to create folder when using File_Save_As

- [Bug Fix] Fix subject processing for special cases of tagging different subjects differently across files.
- [Bug Fix] Fix a minor bug with DFT power.
- [Bug Fix] Fix bug with a network file open of an empty file
- [Bug Fix] Fix expression handling which could cause stack memory to be exceeded.
- [Bug Fix] Fix ambiguity referencing Gravity in expressions which could become ambiguous with Gravity from the model
- [Bug Fix] Fix crash editing non-2D Graph report items when an Interactive Graph exists.

Updates in v2023.06.7

- [Bug Fix] Fix regression in commands by reinitialization of commands between calls. Subsequent calls were being seeded with the signals from previous calls which is incorrect behavior.
- [Bug Fix] Fix empty Kinatrax file that was causing a crash.
- [Bug Fix] Fix a rare circumstance causing IK to fail.

Updates in v2023.06.6

- [Bug Fix] Fix expression for PI() function which was inadvertently broken in 2023.06.3
- [Bug Fix] Fix for expression which caused a stack overflow
- [Bug Fix] Allow component to be specified on Model::Landmark expression
- [Feature] Additional Emg_Time_Domain processing changes

Updates in v2023.06.3

- [Feature] Add Command for Emg_Time_Domain
- [Bug Fix] Prevent crash with duplicate rotation signals
- [Bug Fix] Prevent editing of LAB segment
- [Bug Fix] Fix regression to allow component on Model Landmarks in expressions

Updates in v2023.06.2

- [Bug Fix] Fix graphing of certain signals that have a lot of frames that caused the drawing of lines to appear to go above or below the bounds of the graph.
- [Bug Fix] Fix selection of tracking targets in the pelvis edit, file tag and subject tag dialogs.
- [Bug Fix] Continued pipeline/command parsing changes

Updates in v2023.06.1

- Internal Only Release, test and document new command

Updates in v2023.05.4

- [Bug Fix] More fixes for Meta Command parsing regression in 2023.05.1

Updates in v2023.05.3

- [Bug Fix] More fixes for Meta Command parsing regression in 2023.05.1

Updates in v2023.05.2

- [Bug Fix] Fix for Meta Command parsing regression in the last version.

Updates in v2023.05.1

- [Enhancement] Add Version() function to Evaluate_Expression
- [Enhancement] Add second synchronized video play back window
- [Enhancement] Add expression for Metric_Cyclogram_Perimeter and Metric_Cyclogram_Area
- [Bug Fix] Fix regression in assign model to motion file dialog
- [Bug Fix] Fix regression for Search/Replace tag didn't update graphs properly
- [Bug Fix] Fix regression resulting in same signal used inside an expression
- [Bug Fix] First Derivative didn't report error when not calculated
- [Bug Fix] Fix export of Temporal Distance Report item

Updates in v2023.04.3

- [Bug Fix] Fix bug introduced in report annotations
- [Enhancement] Modified spacing in processing results

Updates in v2023.04.2

- [Enhancement] Add compute margin of stability function to Evaluate_Expression
- [Bug Fix] Change new parameter added to File_Open for Folder to File_Path since use of the parameter Folder is common and its use here can break subsequent pipeline commands.

Updates in v2023.04.1

- [Enhancment] Evaluate_Expression add matrix operations
- [Enhancement] File save without histories
- [Enhancement] Add Event Sequence to export multiple C3D files for Export_Polygon_C3DFile command
- [Enhancement] Add StdDev shade style to the Make_A_Line_Graph command.
- [Bug Fix] Temporal Distance Report Item vertical chart fix
- [Bug Fix] Fix crash in rare circumstances on recalc
- [Bug Fix] Show kinematic only segments for link_model_based items where they were missing.
- [Bug Fix] Fix broken export to ascii of Origin and Rotation
- [Enhancment] Add export to matfile of Origin and Rotation
- [Bug Fix] Fix FP_Auto_Baseline reduced minimum which became broken
- [Bug Fix] Fix report annotations bug
- [Bug Fix] Fix clean up of model data in motion file when it is unassigned from a model

Updates in v2023.03.1

- [Infrastructure] Upgraded to new compilers
- [New Feature] Allow saving cmz with histories removed
- [Enhancement] Markerless systems support changes
- [Bug Fix] Fix crash when certain commands are run before a recalc
- [Bug Fix] Fix report template reordering when search/replace is done on a report page

Updates in v2023.02.3

- [Bug Fix] Fix P2D mouseover bug which prevented other lines from appearing in mouseover text
- [Bug Fix] Signal component not updated internally when changing file tag
- [Bug Fix] Report fix when deleting all pages of the report
- [Bug Fix] Report fix for selecting item in the report tree
- [Enhancement] Update IK constraints to use 2 chains (speed)

- [Enhancement] Markerless model update on file open

Updates in v2023.02.2

- [Bug Fix] Fix logic in breakpoint command when called nested down Meta-Commands.
- [Bug Fix] Fix error in Metric Mean which should be just a warning, as well as a crash found when testing.
- [Bug Fix] Handling of rotations when data is missing, as well as support for new generic model.

Updates in v2023.02.1

- [Bug Fix] Fix signal parameter optimization to match usage in commands
- [Bug Fix] Some event commands were not making use of subject prefixes
- [Bug Fix] Stop showing assign model to motion file dialog when there is only one primary model
- [Feature] Hidden parameters added to improve efficiency of certain model building commands.
- [Feature] More support changes for markerless data

Updates in v2023.01.4

- [Performance] Removed debug code which slowed down performance
- [Usability] Hide warning when it is not needed
- [Bug Fix] Make signal parameters consistent with command use.

Updates in v2023.01.3

- [Enhancement] Use of subject prefix along with Kinetic_Kinematic data in report graphs
- [Enhancement] Additional enhancements to markerless processing
- [Bug Fix] VIK file not saved for NO_SUBJECT.

Updates in v2023.01.2

- [Performance] Made several changes to dramatically improve performance with many secondary models and a lot of segments
- [Enhancement] Add ability to highlight target range in real-time speedometer graphs
- [Bug Fix] Fix bug with multiple subjects not animating properly
- [Bug Fix] Double click to add event to analog signals was broken (added at wrong frame).
- [Bug Fix] Fix huge .cmz file size in customer file
- [Bug Fix] Expression evaluation of secondary model items
- [Bug Fix] Landmark item loses value when duplicated in secondary models
- [Bug Fix] Fix crash with buffer overflow

Updates in v2023.01.1

- [Enhancement] Additional markerless systems updates and support
- [Enhancement] Import_Signals_From_C3D_File support for IMPORT_ANALOG_SYNCH parameter
- [Bug Fix] Fix for report graphs drawing mean to not be case sensitive
- [Bug Fix] Fix crash when creating a metric
- [Bug Fix] Move folder path up in list of export parameters
- [Bug Fix] Fix Update_Force_Corners crash
- [Usability] Fix eroneous segment being highlighted in certain circumstances when using multiple models
- [Usability] Modify command parameter name from Subject_Name to Subject_Prefix to represent parameter use.

Updates in 2022 (post v2022.08.1)

Updates in v2022.12.2

- [Bug Fix] Graph edit PROCESSED folder not recognized
- [Bug Fix] No models returned when ALL_MODELS selected
- [Enhancement] Additional markerless systems support changes

Updates in v2022.12.1

- [Bug Fix] Metric Root Mean Squared fix for if one component of the result is NO DATA (NAN)
- [Enhancement] Realtime graphing features, circular graphs
- [Enhancement] Additional Theia file support changes

Updates in v2022.11.3

- [Bug Fix] Fix global setting which prevented multiple models from being assigned to multiple motion files.
- [Enhancement] Additional Theia3D processing changes.

Updates in v2022.11.2

- [Bug Fix] Fix crash adding or editing a text/metric table

Updates in v2022.11.1

- [Bug Fix] Fix crash performing quality assurance analysis
- [Bug Fix] Fix error message for automatic gait events when not performing TPR.
- [Enhancement] Minor tweak to graph title alignment
- [Enhancement] Additional Theia3D processing changes.
- [Usability] Fix real-time dialog showing multiple copies of the same metric / signal
- [Usability] Show landmark definition items even when the items don't exist in the current static trial.

Updates in v2022.10.2

- [Bug Fix] Fix regression from performance change released in v2022.10.1

Updates in v2022.10.1

- [Enhancement] Real-time speedometer graph changes and 3D viewer support
- [Enhancement] Allow alignment for graph titles to align top, center or bottom in area above graph.
- [Enhancement] Allow mouseover of graphs that are not time or frame based.
- [Enhancement] Additional Theia3D processing changes.
- [Performance] Report pages with 2D Stagger graph were very slow to draw, improve to be same speed as other 2D graphs
- [Bug Fix] Center of Mass with multiple static trials assigned to motion file wasn't using additional models
- [Bug Fix] Add_Landmark_From_Event fix

Updates in v2022.09.1

Updates in 2022.07.1 * [Bug Fix] Metric Signal Value At Event fix for adding extra result that was not needed, and named odd when appending to signal name. * [Bug Fix] Occasional lockup at launch fixed, memory overrun * [Usability] Speed up operations in pipeline workshop that were extremely slow * [Bug Fix] Fix combo entries of the compute link model based dialog. * [Enhancement] More Theia3D file processing changes

- [Bug Fix] Fix landmarks between 2 markers at same location
- [Bug Fix] Fix Set_Active_File behavior
- [Enhancement] Theia3D file processing changes

Updates in 2022.06.2 * [Enhancement] Performance improvement to Transform Data Coordinate System when upsampling to analog rate * [Bug Fix] Guard against crash for activation heartbeat corrupted return data * [Enhancement] Additional Theia processing changes * [Bug Fix] Fix regression in Automatic_Gait_Events_TPR_Processing

- [Enhancement] Add Metric_Mean to real-time pipeline
- [Enhancement] Theia3D file processing changes

Updates in 2022.06.1 * [Enhancement] Additional Theia processing changes * [Enhancement] Performance improvements to pipeline workshop * [Enhancement] Performance improvements to File New * [Bug Fix] Additional changes to try to reduce instances of bug opening a file memory issue.

- [Enhancement] New speedometer graph in real-time biofeedback
- [Enhancement] Theia3D file processing changes

Updates in 2022.05.4 * [Enhancement] New command to import C3D parameters from an INI (.ini) file. File_Import_Parameters_From_INI_File * [Enhancement] More Theia under the hood changes for processing Theia 3D data files

- [Bug Fix] Temporal Distance report item was not using file tags (regression)
- [Bug Fix] Fix Temporal Distance regression using subjects
- [Bug Fix] Model metrics display not being updated when commands change metrics while window is open

Updates in 2022.05.3 * [Bug Fix] Fix report scripting issue * [Enhancement] More Theia processing changes * [Bug Fix] Save TRS signal dialog quirks * [Bug Fix] Import from C3D files wasn't handling units (in rarely used scenario)

- [Bug Fix] Fix regression in File_Close command using new parameter
- [Enhancement] Theia3D processing changes

Updates in 2022.05.2 * [Bug Fix] Fix crash in Metric_StdDev * [Bug Fix] Fix event highlight color mismatch * [Enhancement] Performance enhancements with Rotation based segments * [Enhancement] Cleanup toolbars to make them more readable and clear. * [Enhancement] More Thiea file processing changes * [Bug Fix] Functional Joints assigning frames for multiple files from command didn't work * [Enhancement] KinaTrax Change pose during static trial to create joints

Updates in 2022.05.1 * [Bug Fix] Fixed crash when using IK in a secondary model. * [Bug Fix] Fix Link Model Based computation when using NO_SUBJECT::Lab * [Bug Fix] Graph mouse hover information display fix for non standard data rate signals

Previous Updates

{| class="mw-collapsible mw-collapsed wikitable" width="65%" | style="text-align:left;" | Change List

Updates in v2022.08.5

- [Enhancement] Add Metric_Mean to real-time pipeline
- [Enhancement] Theia3D file processing changes

Updates in v2022.08.4

- [Bug Fix] Additional changes to try to reduce instances of bug opening a file memory issue.
- [Enhancement] Theia3D file processing changes

Updates in v2022.08.3

- [Bug Fix] Temporal Distance report item was not using file tags (regression)
- [Bug Fix] Fix Temporal Distance regression using subjects
- [Bug Fix] Model metrics display not being updated when commands change metrics while window is open

#Update v2022.08.2

- Update missing .dll

Updates in 2022.04.1 * [Bug Fix] Continued fixing of multi-subject related bugs in commands. * [Bug Fix] Copy and reflect segment with subject prefix was broken. * [Bug Fix] Subject prefix IK motion constraint not properly being saved to model template. * [Bug Fix] Additional changes to fix the rare issue opening a file that hangs Visual3D and eventually either opens, or crashes Visual3D. Uninitialized variable found that is the probable culprit. * [Bug Fix] Fix for model file that used a percent symbol in the file name. * [Enhancement] Theia 3D related support * [Enhancement] Search/Replace event sequence in report template (subject prefixes) * [Enhancement] Change to 'Help' menu items to use https rather than http for secure connection. * [Enhancement] Compute_Model_Based dialog change to better handle subject prefix * [Enhancement] Color segment tag combo to indicate whether the tag exists. Also hide the combo when C3D files without subjects are loaded. * [Enhancement] Fix the endless “Fatal read error” message pop ups when a file is corrupted on disk.

Updates in 2022.03.3 * [Bug Fix] Several critical bug fixes related to Metric commands.

Updates in 2022.03.2 * [Bug Fix] Fix regression which prevented certain resultsignals which should be allowed from being created * [Enhancement] Metric Minimum/Maximum added a new parameter for calculating the per file minimum/maximum

Updates in 2022.03.1 * [Enhancement] More changes for drawing geometric objects on segments * [Enhancement] Changes to Apply/Append model template * [Enhancement] Don't allow certain data types as the result signal for commands. * [Enhancement] Compute_Model_Based changes for subject

tags * [Bug Fix] Fix FPLoc bug locating force platform in customer file * [Bug Fix] Brought back certain missing calculations for metric commands (regression) * [Bug Fix] Fix ambiguity in expressions for model items with component.

Updates in 2022.02.2 * [Bug Fix] Regression in Parameters parsing in expressions * [Bug Fix] Signal types, etc. display adding a graph to a report for Frame_Numbers, Time * [Bug Fix] Ambiguity parsing expressions for subject prefixes/component * [Bug Fix] Typing in landmark in property page not being applied * [Enhancement] Consistency in naming conventions for subject metric signals with previous version

Updates in 2022.02.1 * [Enhancement] Landmark editing changes for ease of use. * [Enhancement] Allow geometric objects to be added to segments drawn in 3D viewer. * [Enhancmment] Add check box to dialogs for displaying of prefixes on signals/events * [Enhancement] Modify menu options for model templates * [Enhancement] Export to ASCII dialog support for subjects * [Bug Fix] Fix Parameters expression in model builder, plus support for force platforms For example: FP2, corner 1 MODEL::PARAMETERS::FORCE_PLATFORM::CORNERS::2[1] * [Bug Fix] Temporal Distance fixes * [Bug Fix] Fix regression accessing first joint in the joint array * [Bug Fix] Fix for Metric Maximum regression * [Bug Fix] Fix report add graph error filling in the signal combo boxes with folders/signals * [Bug Fix] Opening an ASCII file with events wasn't creating events properly

Updates in 2022.01.2 * [Bug Fix] Fix the edit landmark window for landmarks that are offset to a marker location

Updates in 2022.01.1 * [Enhancement] More support for handling subjects

1. Generic Export to Ascii for each subject
2. Pipeline import of generic signals without prefixes
3. More command support for multiple subjects

* [Enhancement] Real time support for normalizing link model based data to a metric * [Enhancement] Real time support for CURRENT_SIGNAL in Evaluate_Expression * [Enhancement] Fixes to support Theia C3D files * [Bug Fix] Real time fixes to support short

```
C3D files (event and metric detection)
```

* [Bug Fixes] Various bug fixes supporting multiple

```
subjects in a C3D file
```

* [Bug Fixes] IK fixes for subject prefixes * [Bug Fix] Fix reading C3D files over 2GB

Updates in 2021.12.2 * [Enhancement] More command support for subjects * [Bug Fixes] Fixed bugs related to subjects from

```
prior preview releases.
```

* [Enhancement] All prior dialog updates for

```
usability with multiple subjects
```

* [Enhancement] All prior multisubject support

```
using subject prefixes defined in C3D parameters.
```

Updates in 2021.11.5 * [Enhancement] Multisubject support using subject

```
prefixes defined in C3D parameters.
```

* [Enhancement] Mutiple separate static calibration

```
files to be applied to C3D files.
```

* [Enhancement] Numerous support for multiple

```
subjects in order to support metric and other
command data calculations.
```

Updates in 2021.09.1 * [Bug Fix] Fix customer crash when using IK * [Bug Fix] Fix Remove_Metric_By_Threshold command * [Enhancement] More releases supported for

```
interfacing with MATLABÂ®.
```

Updates in 2021.06.2 * [Regression fix] Fix filters when signal name

```
is not specified
```

* [Enhancement] New command to swith to workspace

```
tab
```

* [Bug Fix] Fix export row format * Enhancement] Add command for importing data

```
from Delsys Avanti csv files
```

* [Bug Fix] Allow files in hidden folders to be

```
opened in the pipeline
```

* [Bug Fix] Compute_Distance_Map fix for segment

```
colorization
```

* [Enhancement] Some Theia file processing

```
changes
```

Updates in 2021.06.1 * [Enhancement] Add additional default folders

```
for user to set in the pipeline for added
flexibility.
```

* [Enhancement] Add start and end frame for

```
export to ascii when outputing to XML.
```

* [Enhancement] Additional Theia3D support

```
changes
```

* [Bug Fix] Fix crash on a bad IK chain. * [Enhancement] Pipeline command to create

```
a graph should create the graph anyways even
when signal does not exist.
```

* [Bug Fix/Enhancements] CalTester jig bug,

```
and implement new features
```

* [Feature] Compute_Distance_Map updates. * [Enhancement] Fix bad parameter block with

```
incorrect size given in C3D file.
```

Updates in 2021.04.1 * [Bug Fix] Compute Distance Map changes * [Bug Fix] OpenSim export bug fix * [Enhancement] Resample Data command features * [Enhancement] Changes for Theia files support

Updates in 2021.03.2 * [Bug Fix] Fix Real Time calculation of

```
Joing Angular Velocity which was off by
a factor of 4 due to incorrect data rate
calculation.
```

* [Bug Fix] Fix Theia3D manufacturer

```
parameters to recognize Theia as the
manufacturer.
```

* [Bug Fix] Kinatrax File Open empty C3D * [Bug Fix] Command Modify Analog

```
Parameters needed to have data structure
initialized.
```

* [Feature] Add resampling functionality

```
when Analog signals are imported as DERIVED.
```

Updates in 2021.03.1 * [Bug Fix] Initialize KinaTrax variables

```
and move command to set the CS
alignment.
```

* [Bug Fix] Fix Metric Maximum and

```
Minimum when using the Library.
```

* [Bug Fix] Fix model angular momentum

```
regression.
```

* [Performance] Speed up creating new graph

```
when browsing the library, after closing
the edit graph dialog.
```

Updates in 2021.02.1 * [Bug Fix] Fixed representative signal

```
processing.
```

* [Bug Fix] Fixed display of

```
event_sequences in quick view display
```

* [Bug Fix] Fixed expression bug in new

```
leg of expression parsing intended to
process strings which indexed
improperly into empty double array.
```

Updates in 2021.01.1 * [New Feature] Addition of event range

```
for FP Auto Baseline for files with bad
force data at the start or end of trial.
```

* [Bug Fix] Fix fo rmodifying the max/min

```
range of multiple graphs.
```

* [Bug Fix] Minor correction for combining

```
forces when a segment hits multiple
plates.
```

* [New Feature] Allow JOINT_VELOCITY and

```
JOINT_ACCELERATION for
Compute_Model_Based pipeline command
to resolve resultant vector in a
Cardan sequence.
```

* [New Feature] Allow strings to be used

```
in string expressions mixed with values
```

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in order to use * operator and +
operator to select string values based
on conditionals.
```

Updates in 2020.11.2 * [Bug Fix] Fix list boxes with checks

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so they don't overlap when checking
the box.
```

* [Compatibility] Updates for Theia

```
compatibility
```

* [Bug Fix] Fix for Joint Radius ratio

```
(reduced)
```

Updates in 2020.11.1 * [Bug Fix] Metric Mean fix for “No Data” * [Usability] Remove Apply Model Template

```
"pop up" when not wanted
```

* [Enhancement] Enhancement for

```
combining 2 force platforms when not
in the same plane
```

Updates in 2020.10.3 * [Bug Fix] Fix graph selection in the

```
Signal and Events Tab
```

Updates in 2020.10.2 * [Bug Fix] Fix crash when you add a

```
Signal and Events tab graph, then
perform certain actions afterwards.
```

* [Usability] Fix highlighting items,

```
selecting an  item on the Report tab.
```

Updates in 2020.10.1 * [Bug Fix] Fix crash using characters

```
in a character set not supported in
a Microsoft English (US) compile.
NOTE: While the crash is now handled
a message pop up tells the user that
the file name/path contains unsupported
characters.  The software may or may
not handle everything properly, such
as adding the file name to the recent
```

```
files list.  This is dependent on
underlying support of the microsoft
routines on the computer.
```

Updates in 2020.09.1 * [Bug Fix] Fix metric table items that

```
were showing up blank
```

* [Bug Fix] Realign graph titles for

```
backward report template compatibility
```

* [Bug Fix] Fix the drawing and use of

```
graph tics
```

* [Feature] New command to assist with

```
reorganizing balloon text locations
```

Updates in 2020.08.3 * [Feature] Further support for Kinatrax

```
.c3d file
```

Updates in 2020.08.2 * [Feature] Support for Kinatrax .c3d

```
file containing has ROTATION data.
```

* [Bug Fix] Set Pipeline Parameter To

```
List Of Model Names did't work in
the Library.
```

* [Bug Fix] Report dialog changes for

```
black graph window.
```

* [Bug Fix] Fixes to be able to graph

```
Kinetic_Kinematic folder data.
```

Updates in 2020.08.1 * [Bug Fix] Fix C3D file read for file

```
with large parameter.
```

* [Bug Fix] Fix Export command to C3D

```
file check for the end event.
```

Updates in 2020.07.4 * [Feature] Add ability to capture .avi

```
files of the animation without having to
click 'OK' button for each export.
```

* [Feature] Normalize .avi output of

```
synchronized motion files so animations
using start and end event both start,
and end at the events in both files.
End frame of 0 will not normalize.
```

Updates in 2020.07.3 * [Bug Fix] Real-Time Metric_Maximum became

```
broken and had a pre-existing issue with
certain combinations of signal/events
```

* [Bug Fix] Fix crash when modifying a

```
parameter for a Kistler file that doesn't
contain baselines for analog signals.
```

* [Feature] Add ability to set a pipeline

```
parameter to list of tags only for tags
associated with the active files.
```

Updates in 2020.07.2 * [Bug Fix] Fix several sources of Visual3D

```
  crashes due to unexpected causes (guard
  commands and handle).
```

* [Bug Fix] Fix for filtering rotation

```
  matrices.
```

* [Compatibility] Update Motion Shadow

```
  support
```

* [User Interface] Fix pipeline folder prompt

```
  to be modal instead of modeless. This
  also prevents some issues which can cause
  crashes.
```

* [Debug] Add multiple message boxes to aid

```
  in debugging program errors.
```

* [Bug Fix] Better file handling when

```
  exporting data to a text file.
```

Updates in 2020.07.1 * [Bug Fix] Fix a crash when saving a file onto a

```
  remote drive using File_Save_As command and
  prompting for the file name.
```

* [User Interface] Overlay Report - fix warning

```
  message
```

Updates in 2020.06.1 * Improve C3D read of incorrectly written C3D file * Fix naming of analog signals in C3D file without

```
Analog Labels
```

* Export C3D range expression support * Use arrow keys to change pages in report * JSON output fixes * CODA/Composite pelvis fix creating joints * Create Any_Of and All_Of expression functions to

```
create an overall boolean return (0 or 1) for
whether all, or any of a data item matches the
expression inside the function.
ie; All_Of(METRIC::ORIGINAL::DISTANCE_ITEM > 0.7)
    Any_Of(METRIC::ORIGINAL::DISTANCE_ITEM > 0.7)
```

Updates in 2020.05.1 * Fix bug saving to a remote drive from the

```
command File Save As. File ends up remaining
in the user's appData/local/temp folder. File
being saved to ends up being empty. The copy
from the temp folder to the final folder was
not trapped correctly in the command.
```

* Progress control when shown from pipeline

```
favorites was not hidden after script completion
```

* Fix editing scripts using notepad button when

```
the script has whitespace in the file name.
```

* Fix arrow controls in report editing dialog. * Delete IK Properties when loading a .vlk file. * Account for c3d file units when using the create

```
force platform corners based on the extent of the
force platforms in the Force Structures dialog.
```

Updates in 2020.04.1 * Recent improvements are now out of beta

```
and are now released to production.
```

* Tab to export CalTester file data * Fix remote drive issue with performance

```
and corruption due to the increased risk of
an undetected network blip while writing.
(Note: this uses local C: drive as temporary
staging point when using a network drive. If
you are using a network drive, ensure you have
enough space available for temporary .cmz files).
```

* Make_Image_Item command synched with the edit

```
dialog parameters.
```

* Fix legend printing when using dashed lines. * Allow gap filling for GCVSPL filter.

Updates in 2020.03.26 * Allow export of CalTester data from

```
CalTester tabbed dialog
```

* Report Graphs bug fix * Metric_Signal_Values_In_Sequence

```
interpretation of NAN values and parameter
```

* Minor bug fix when analog rate not specified * Fix Metric Table report item editing

```
when you click the item to edit.
```

Updates in 2020.03.16 * Fix margin settings being reset when

```
switching modes or saving a file.
```

* Metric signal values in sequence dialog

```
changes
```

* Minor force plate changes * Minor Theia support changes

Updates in 2020.03.03 * Fix GVCSPL filter bug getting frames * Updates to command Modify C3D Parameters

Updates in 2020.02.28 * Fix several bugs and crashes editing a report * Performance fixes for pipelines and library * Fix for Xsense crash when lower extremity only * Fix report graph bug which causes multiple graph

```
entities to be created, and incorrect one drawn.
```

* Fix data store quirkiness which could cause odd

```
behavior throughout.
```

Updates in 2020.02.04 * Fix crash for joint missing both segments * Fix several report editing crash instances * Use full file path for auto built models from movement * Fix tracking target list selection for rare circumstance * Fix GLOBAL item used in Subtract_Signals * Clean up joints created when segments no longer exist * Continue visual changes for 2020 release

Updates in 2020.01.20 * Change to meaningful date based releases so users

```
are aware of how long it has been since their last
update.
```

* Fixed graph draw order in report templates which

```
became reversed.
```

* Add GET_NUMBER_OF_REPORT_PAGES function for expressions

```
and allow use on report pipeline commands.
```

* Fix quirky behavior in FPLoc dialogs and jig property

```
pages related to drawing targets in color.
```

* Modifications of data written to mvnx file * Fix 2 dimensional float data dimensions.

Updates in 6.05.07 * More data file support changes * CalTester fix * STRING_REVERSE_FIND function added to expressions

Updates in 6.05.06 * Remove inadvertent debug code left in * Allow passing in default folder when launched from

```
the command line
```

* Allow multiple pipelines to be passed in when launched

```
from the command line
```

Updates in 6.05.05 * Fix CalTester selection of a range so it will persist. * Make Right_Toes and Left_Toes default segments * Modify Delsys ascii import to read AVANTI data * Computer Power from DFT coefficients was only computing

```
the first instance (fixed).
```

Updates in 6.05.04 * Fix synchronized video issues * Add expression functions for converting between

```
rotations and quaternions
```

* X-Factor projection feature * Fix Make_Image_Item command to update report list

```
when it is the only item on the page.
```

Updates in 6.05.03 * More enhancements and updates to report editing * Allow wildcards to be used for Signal_Names in

```
pipeline commands
```

* Updates to support changes made to the C3D Format * Point_Distance_To_Line function added as an expression

Updates in 6.05.02 * Updates for systems using C3D rotations.

Updates in 6.05.01 * Under the covers major change in compiler * Report editing improvements for the report tab * Fix print to PDF error for staggered graphs * Some changes in infrastructure for future Visual3D

```
features.
```

* Add Set_Pipeline_Parameter_To_List_Of_Model_Names

```
command to assist with running model building
commands.
```

* Fix Command_Signal_Cluster_Interpolate command crash * Clean up model building dialogs to prepare for future

```
features being developed
```

* Add ThoracicCervicleAcromiumToT12 graphic object * Fix Transform_Data_Coordinate_System to work with

```
Force Plate data when using IK
```

Updates in 6.03.07 * Add capability to remove segments from consideration

```
from assigning a force to it.
```

* Some commands using a model metric sometimes do not

```
access the model properly, fixed to be consistent
when multiple models are present.
```

* Gap fill clusters using locations of the tracking

```
markers (prototype hidden).
```

* Fix page title when no report items exist on the page * Fix CalTester to allow manual selection of the FP

```
being tested.
```

Updates in 6.03.06 * Fix Metric_Event_Count when counting the last

```
frame of a file to account for precision
variances.
```

Updates in 6.03.05 * Report item editing now returns list to same

```
position when you selected item to edit.
```

* Set_View_Options did not default to work the

```
same as previous versions, corrected to allow
setting the background to white.
```

* Metric folder viewing sometimes did not show

```
all items in the folder.
```

* Changes to Copy and Reflect Landmark to work

```
better.
```

* Allow model template to be applied to multiple

```
static calibration file in Open and Append
commands.
```

Updates in 6.03.04 * Fix regression in FP Auto Baseline * Fix bug to make analog synch signal visible * Add edit dialog to Set_Frorce_Platform_Threshold * Fix hybrid segment CG on serializing .cmz files

1. affects drawing of axes at CG

Updates in 6.03.03 * Fix when using rotations to determine pose. * Scaling for P2D signals when using manual range. * Create edit dialog for Set_Force_Platform_Threashold

Updates in 6.03.02 * Fix error in Metric_Signal_Value_At_Event

Updates in 6.03.01 * Delay load of dlls not called in Windows 7

```
to prevent a Visual3D load error.
```

Updates in 6.03 * Roll up of all bug fixes and development changes

```
in release candidates.
```

* Set_Model_Metric command name compatibility

```
with previous releases.
```

Updates in 6.01.52 (release candidate) * Additional modifications for read only models

```
when viewing the CMZ/CMO library of files.
```

Updates in 6.01.51 (release candidate) * Fix read only library dialogs to disallow

```
applying changes to a library model.
```

* Fix libary display of targets in a model. * Continue bug fixes for Average Filter and

```
Set_View_Options command.
```

Updates in 6.01.50 (release candidate) * New report editing interfaces to integrate

```
various dialogs into cleaner tabbed
design.
```

* COP_PATH normalization bug fix. This used

```
to normalize ML and AP to the conical foot
circumference and was changed to normalize
only to the foot radius.
```

* Real Time Plugin cleanup * Fix crash in set data to new values. * Add ALL_MODELS and ACTIVE_MODELS to

```
Set_Model_Metric command to specify model.
```

* Update processing results if pipeline run

```
multiple times.
```

* Text Data dialog bugs when resizing fix. * Fix activiation bug on Windows 7 * Option added to force odd frames on filter

```
commands.
```

* Export FP and assignments from View/Modify

```
Force Platform Assignments tab.
```

* Modify Force Structure Parameters Speed Values

```
were set to NAN
```

* Fix transform data coordinate system upsample

```
rate with IK signals.
```

* Set view options command fixes for options which

```
weren't working.
```

* Fix bug moving event frames in dialog. * Fixes for synchronized motion file dialog so

```
it works better with the command.
```

Updates in 6.01.49 (release candidate) * Fix control buttons on the real-time

```
biofeedback tab.
```

* Fix activation use of computer name

```
to prevent duplication of mixed and
all upper case names.
```

Updates in 6.01.47 (release candidate) * Fix rare bug causing a crash for setting

```
analog baselines after loading a .cmz file
when fp_zeros are -1 on file load.
```

* More changes in prompt for pipeline parameter

```
value
```

* RT fix for disconnect/reconnect * Menu option to view ReadMe file.

Updates in 6.01.45 (release candidate) * Allow segment colorization in synchronized

```
motion file animation
```

* Fix in prompt for pipeline parameter value * Minor error corrected in real-time graphs * Add option for Rename_Signals in cal file

Updates in 6.01.43 (release candidate) * Updated video rendering for greater

```
compatibility with video codecs.
```

* Fix Make Line Graph command for

```
intermediate events and exclude events
used with Event_Sequences
```

* Indefinite Integral initial value fixes * Event range issue when 2 events exist

```
at the same time (rare instance).
```

* Continued modifications in preparation of

```
new report graph editing features.
```

* Fix Evaluate_Expression crash for spline * Software activation fix for Unicode Asian

```
characters.
```

* Fix missing Compute_Distance_Map command

```
history.
```

Updates in 6.01.41 (release candidate) * Fix discontinuity of joint angle X around

```
90 degrees.
```

Updates in 6.01.39 (release candidate) * Fix File Open regression in 6.01.37 for

```
.cmo files saved between 2009-01 and
2010-11 versions of Visual3D.
```

Updates in 6.01.37 (release candidate) * Fix digitizing pointer crash regression * GCVSPL spline now handles rotations * 64 bit IK precision tweak * Add string_to_upper and string_to_lower

```
expression functions
```

* Fix consistency for IK target color animation * Fix filtering crash, deny filtering for

```
folders that shouldn't be filtered, fix
filter minor bug.
```

* Tweak to handling of graph tick marks. * New real time Metric_Maximum command * LINK_MODEL_BASED GRF_DATA now set to zero,

```
instead of NAN when no force present.
```

Updates in 6.01.36 * Fix crash when event referenced in an

```
event sequence is empty (Performance fix
regression).
```

Updates in 6.01.35 * Fix crash obtaining event ranges when

```
one of the events exists, but is empty.
```

* Code infrastructure changes for

```
standardization
```

* Lowpass Filter error reporting update

```
for maximum cutoff frequency
```

* Modifications for synchronized motion

```
files (and library capability).
```

* Popup command wizard fix for recognizing

```
the correct pipeline.
```

* Fix for CalTester target residuals being

```
graphed.
```

Updates in 6.01.34 * Fix marker highlight in Model Building

```
regression for segment calibration
markers.
```

* Fix segment dialog for rotations. * Remove warning for Make_Line_Graph

```
when event sequence not used.
```

* Map segment & muscle color modified to

```
use default active model.
```

* Set_Scale_Of_Objects command added.

Updates in 6.01.33 * Helical Angle fix for when resolution

```
coordinate system is set.
```

* Set Animate Multiple File changes * Allow export of Force assignments * Allow import of TEXT_DATA from

```
ASCII file.
```

Updates in 6.01.32 * Fix regression for edit graph for

```
start and stop event.
```

Updates in 6.01.31 * Fix precision issue exporting to ASCII

```
files
```

* Add Event_Sequences support for all

```
commands and graphs.
```

* Add a bat object * Fixed synchronized scene for multiple

```
models
```

* Misc Kinatrax changes * Filter cutoff for 6DOF segments * Fix crash in saving model template * Allow breakpoint text to be TEXT_DATA

```
signal
```

* Fix default folder on Import ASCII to

```
be null string, not .txt
```

Updates in 6.01.30 * Fix position of report page title to

```
account for margin changes
```

* Fix pipeline breakpoint dialog to

```
allow for more text to be displayed
```

* Fix command to load RT pipeline to

```
lock shared resources to prevent
crash
```

* Camera tracking tweaks * Modify label scaling in reports * Allow selecting a line on a graph in the

```
report tab when animating
```

* Allow event_sequence when exporting dat

```
to an ASCII file
```

Updates in 6.01.29 * Fix performance issue with event sequences * Add animation frame line to report graphs * Add legend option to view graph line value

```
when viewing animation in report mode
```

* Fix bug which can create duplicate event

```
timestamps at the same frame
```

* Fix animation banner visibility * Fix event sequence export to ASCII bug * Fix command to attach camera to segment

Updates in 6.01.28 * Real Time resource leak causing freezes and

```
crashes
```

Updates in 6.01.27 * Handle missing data when exporting report

```
item to text file
```

* Formatting of report text size tweaks * Add Frame_Count function to Evaluate_Expression

```
to return the number of frames in a signal
```

* Fix explicit frame numbers when specifying a

```
frame in an expression to handle it being
1 based
```

Updates in 6.01.26 * Allow setting pipeline parameter to a

```
file's folder path.
```

* Colormap updates, including the ability

```
to set fixed range colormaps to standardize
the colormap used to color animation objects.
```

* Fix obscure bug displaying the Center of

```
Gravity of segments when opening saved
.cmz files and the coordinate system is
not Z up, and when the option is selected
to draw the axis at the center of the segment.
```

* Allow explicit frame range for the SNIP

```
expression.
```

* FILE_OPEN fix for .vnd files. * Dialog item user interface tweaks for

```
several commands.
```

* Fix crash for certain sequences of navigation

```
through model muscle dialogs.
```

* Change behavior of expression or operator |

```
to better handle NAN.
```

Updates in 6.01.25 * Fixed regression in opening VND files

```
caused an invalid error message to appear
and the file not opened.
```

Updates in 6.01.24 * 64 bit Matlab version support

Updates in 6.01.23 * Fix missing View Kinematic Only Segments

```
property read from registry.
```

* Update viewer when selecting tracking

```
markers in Model Builder
```

* Fis background color of RT graphs for

```
threshold when selecting default
```

* Changed interpretation of legacy treadmill

```
direction
```

* Fix digitizing post processing crash * Display Signal Stats data header fix for

```
quick view
```

* Fix getting filenames from disk for extra

```
items returned in rare scenarios.
```

* Fix Evaluate_Expression crash * Force a recalc when saving and motion

```
file segments are out of synch with model
```

* Avoid pelvis gimbal lock during follow

```
through using Z-X-Y
```

Updates in 6.01.22 * Fix timestamps when only analog channels

```
streamed.
```

Updates in 6.01.21 * Fix real time crash editing real time

```
pipeline while streaming
```

* Fix baseline changes in

```
Modify_Analog_Parameters command.
```

* Fix using reduced FP min in

```
Auto_FP_Baseline command
```

* Fix time offset in Event_Copy command * Fix crash when .cmz file is saved

```
after modifying the number of segments
in the model, but without applying the
model to the motion files.
```

* Backward compatibility fix for .cmz

```
segment residual to prevent crash when
reading new .cmz files in older Visual3D.
```

Updates in 6.01.20 * Basic filtering BETA added to realtime * Several minor bugs fixed in the RT

```
 Biofeedback processing
```

Updates in 6.01.19 * Fix segment residual for last frame of data

```
read by .cmz files.
```

* Fix minor recent file list issue. * Create Analog Rate parameter if missing

Updates in 6.01.18 * Fix Spline/Snip commands for P2D data. * Allow graphing of 1 component P2D data.

Updates in 6.01.17 * Fix .cmz file open regression of files

```
with a lot of events.
```

* Fix Set_Data_To_New_Values to work with P2D

```
data
```

* Fix RT bar graph quirks * Fix reading Matfiles with extra unexpected

```
variables that are not cell arrays
```

* Save model template fix for IK rotation axes * Allow deleting data with blank signal name * Fix quirks with drawing the floor

Updates in 6.01.16 * Processing results performance changes and

```
fix display settings.
```

* Allow the user to set default results settings

```
and temporary ones for the current pipeline
by command.
```

* Allow P2D data for Set_Data_To_New_Values

```
command.
```

* Add @Eval( ) for special cases for command

```
parameters.
```

* Fix exporting more than 255 events. * Fix analog scale when set to NaN. * Save paper size to .cmo/z files. * Fix IK for a 1 segment link. * Fix Export_Line_Graph_Pipeline components.

Updates in 6.01.15 * Fix uninitialized variable and consolidate

```
duplicated information internally.
```

Updates in 6.01.14 * Enhance internal pipeline command

```
restrictions for Reckon3D
compatibility
```

Updates in 6.01.13 * Fix View_Processing_Results command * Fix regression setting 'time' to 'frames'

```
in report graphs
```

* Fix Cross_Product obscure components bug.

Updates in 6.01.12 * Add RT graph options for custom title, center

```
the title.
```

* Add RT option to remove Y axis label from

```
biofeedback graphs
```

* Fix popups error unprotecting a folder * Fix report legend on staggered graphs * Fix error loading an interactive graph layout

Updates in 6.01.11 * Tweak real time bar graph spacing and size. * CalTester bug with target data in meters. * Fix export C3D file with landmarks bug. * Fix export C3D file bug when first frame

```
is > 1.
```

* Fix kinematic only Helen Hayes pelvis. * Fix real time color representation in

```
graph dlg.
```

Updates in 6.01.10 * Fix report annotations error with average event * Fix Copy Event dialog which changed new event

```
to upper case.
```

Updates in v6.01.09 * Handle Frames/Time in Realtime * Fix signal folder selection in report graph

```
dialog
```

* Add RT Scroll direction change option for RT graphs * Allow RT Bar graph color change using line color * Add option to view segment lines as cylinders * Fix Resolve_Discontinuity issue with 1st frame * Fix IK dependency order build issue

Updates in v6.01.08 * Fix report crash when annotations index into signal

```
beyond the frames contained in the signal.
```

* Fix bar graph flicker in realtime * Fix realtime FPS processing of Evaluate_Expression. * Tweaks to OpenGL animation

Updates in v6.01.07 * Fix landmark updates when segment location updates

```
for IK in the static model.
```

* Pause when printing from a script in order to

```
prevent issues when printting page changes.
```

* Fix asci file target scaling for some files. * Fix Metric_Event_Sequence_Count

Updates in v6.01.06 * Fix custom segment mass expression from reverting

```
to default expression when using a default
geometry after you modify subject mass.
```

* Revert GCVSPL behavior back to 6.01.03 behavior. * Tweaks to Matlab engine interface to see if it

```
fixes some obscure message from popping up for
some users.
```

* Fix Set Data To New Value for analog subframes * Fix Remove_Prefix_From_Point_Labels when a bad

```
prefix parameter is specified.  Fix modifying
the static trial when no motion file is assigned
to it.
```

* Add a Create_Rotation command * Add segment selection to Compute_Planar_Angle

```
dialog.
```

* Fix Append_Model_Template for IK Chains that

```
have segments that already exist in the model.
```

* Update recent path when there is an error with

```
the file opened, you probably want to go to that
path again to select the correct file.
```

Updates in v6.01.05 * Fix obscure model building error introduced in

```
6.01.04
```

Updates in v6.01.04 * Performance tweaks * Fixes in the Mayo Functional Joints algorithm * Fix multithreading crash * Continued IOR_Quality_Assurance modifications * Fix copy and reflect, or copy segment when

```
segment is not using default SCS
```

* Add Metric_Interquartile_Range command and

```
expression
```

* Change expression integration commands to

```
Indefinite_Integral and Metric_Integrate.
Also changed metric expression commands to
use the prefix "Metric_" to clarify expressions.
```

* Fix exit real time crash when streaming * Fix SVG axis labels * Export animation frame fixes * New command to draw poly lines around a point in

```
real time
```

* Infrastructure changes for processing results

Updates in v6.01.03 * Performance tweaks * Update Opensim default to 2.3 * Fix Modify_Force_Structures crash * Fix Edit_Report_Text dialog bug * IOR_Quality_Assurance command availability * Functional Joints Definition dialog modifications * C3D file fix for customer's erroneous C3D file so

```
it can be read and fixed.
```

* Menu Settings option to turn multi threading

```
on or off for Visual3D.
```

Updates in v6.01.02 * Fix drawing floor when no model file is given * Fix balloon text expression information in

```
saved .cmz files
```

* Real time color changes in graphs for target range * Real time temporal and distance metric creation

```
which prevented use in bar charts
```

Updates in v6.01.01 * Fix balloon text saved to a file which requires

```
expression evaluation
```

* Fix slow loading of Kinatrax files * Fix Real Time graphs when transitioning to lower

```
threshold colors of yellow and red lines
```

* Add Real Time biofeedback command for

```
Biofeedback_Show_Image_In_Range
```

* Include missing .dll required for 64 bit Matlab

Updates in v6.01.00 * Real Time performance and functionality

```
improvements
```

* Matlab now available in 64 bit, with new and

```
real time interfaces to put and eval directly
to the Matlab workspace
```

* Numerous fixes and tweaks. * Evaluate_Expression function additions for

```
Metric_Integrate, Metric_Sum
```

* Bring back old Functional Joints Post Processing

```
abilities that went away in v6.
```

* Visual3D Server interface issues dealing with

```
force platforms and scaling
```

* New IOR Quality Assurance command

Updates in v6.00.34 * Support for Kinatrax file format change. * Add Next and Previous Warning buttons to

```
processing results
```

* Specify size (or null) for a landmark in the

```
3D animation window.
```

* Fix to export landmark when target of the same

```
name contains no data.
```

* Fix for automatic gait TPR to use first good

```
ON and OFF events when first occurance is too
close to the start, or end of a file to perform
TPR.
```

Updates in v6.00.33 * Fix units conversion issue when interfacing

```
with Visual3D RT Server.
```

* Fix SVG export of report to include labels * Fix NAN handling issue in certain expressions

Updates in v6.00.32 * Realtime fix for crash that occurs with

```
specific licensing configurations
```

* Report image resolution fix for high

```
quality image display
```

Updates in v6.00.31 * Fix custom geometry CODA pelvis inertial

```
properties when saving and loading a file.
```

Updates in v6.00.30 * Fixed graphics model object * Fix landmark creation with deep dependencies * Remove Signals for analog, update force platform

Updates in v6.00.29 * Assorted CalTester bugs fixed * Force Structure update bug fixed

Updates in v6.00.28 * Fix user interface issues for encrypted data. * CalTester, fix assorted bugs * Force Structure processing in real-time..

Updates in v6.00.27 * Add Best_Fit_Sphere function to expressions. * Fix Expression RAND function to be more random. * Fix Remove_Signals command for no active files

```
and for model files.
```

Updates in v6.00.26 * Performance fix for exporting high frame graph * Improve defaults on File Save when closing files * Make_Text_Annotations expressions * Fix crash deleting a CODA pelvis * Fix First_Frame when long integer used

Updates in v6.00.25 * Fix legends being drawn underneath graph lines

```
(make work like they were drawn in v5)
```

* Update pipeline processing window when open. * Fix Auto FP Baseline when -Y is up. * Prompt for file save when closing C3D files.

Updates in v6.00.24 * Fix CMO File open crash due to recalc pipeline

```
stack overflow problem.
```

* Fix getting the number of elements from a CMZ

```
Library.
```

Updates in v6.00.23 * Fix crash in Set_Pipeline_Parameter_To_Data

```
when using C3D Parameters.
```

Updates in v6.00.22 * Fix command to File_Open_CalTester_File

```
when a file is named in the command.
```

* Fix dialog to modify force structures.

Updates in v6.00.21 * Revert 'Condition_Statement' to act as

```
'Expression_Loop' used to behave.
```

* Fix activation for users who had a v6 evaluation

```
installed before purchasing.
```

* Allow Set_Pipeline_Parameter_To_Data_Value to use

```
Text data.
```

* Fix for Export_Line_Graph_Pipeline * Fix Export_C3D_File when no files are active

Update in v6.00.20 * Fix CODA Pelvis dialog * Fix bug in Add_Graph_Annotation from pipeline. * Updated a few command dialogs * Fix Conditional_Statement from appearing as though

```
it executes twice in processing results.
```

Update in v6.00.19 * Fix for French language crash. * Tweak printed bold lines to show up properly.

Updates in v6.00.18 * XSens mvnx compatibility fix * Convert Pelvis segment type between types

```
(CODA, V3D_Hybrid, etc).
```

* Kinatrax model changes to match data in .csv file * Feature to create FP surface corners from FP corners * Expression compatibility fix for certain component

```
access formats
```

* Modify copy and reflect to work with more segment

```
name formats (ie; L/R at end of name)
```

Updates in v6.00.17 * Fix crash reading .cmz/.cmo files with Helen Hayes

```
pelvis
```

* Fix Functional Joints/post processing crash

Updates in v6.00.16 * Fix Multiply_Signal_By_Constant to not crash when an

```
element is specified that doesn't exist in the signal.
```

* Fix Call_Script with a breakpoint so it can be resumed

```
properly.
```

Updates in v6.00.15 * Conditional_Statement command made available * Fix validation of Export_Graph command * Fix file handling in Metric Compute Elipse command * Fix bug exporting OpenSim using a front to back treadmill * Fix calling a breakpoint from within a meta-command

What's New in v6.00 * 64 bit support * Multithreaded processing to take full advantage of

```
multicore processors.
```

* CMZ file format to support fast file open times, and

```
model access and processing from the CMZ library
```

* Library segment animation, library model viewing and

```
library Link_Model_Based calculation capability
```

* Performance improvements throughout delivers very

```
high performance model and data computations.
```

* Incorporate CalTester+ force platform corner location

```
functionality into Visual3D
```

* IK Motion Constraints & Boundary Conditions * Enhanced graphs with smoother lines (fix for print to

```
PDF should work for dotted lines)
```

* Syntax color coded text editor (pipeline) * Modeless dialogs for Force Assignments & Force

```
Platform Parameters
```

* Query added to report items

```
(examples using metrics and text data)
```

* Copy Landmark Button * New Commands:

1. Event threshold parameter added for all maximum and

Visual3D v6 Changes = [class="wrap"]

Visual3D v6 changes the way that you interact with Visual3D and the way that it saves information. Data is saved in a new file format (CMZ) that allows for faster loading and saving of files, both on local computers and over networks. Visual3D v6 is 64 bit software that takes advantage of multiple processors and multiple cores, allowing for faster calculations and more efficient use of computer memory. Visual3D v6 also includes a new graphical user interface that allows for more model building and data processing to be done directly in the 3D view, minimizing the need to switch between windows. Visual3D v6 also includes a new model database library, and allows for model based access for calculations across the library of .cmz files. With the new 64 bit version of Visual3D along with multithreading, processing time will be significantly reduced.

NOTE: plug-in modules, real-time, and MatLab support are different in 32 and 64 bit versions. There are separate plugins for 32 and 64 bit versions of Visual3D, you must download the correct plugins for the version you install. The 64-bit version will allow for better use of memory, and supports some later features of MatLab. Some older plugins have not been ported to 64 bit, so if you do not find a plugin you were previously using on 64 bit, download and install the 32 bit version to use the older plugin.

Although there have been many changes to Visual3D, below is an outline of just a few of the new features and new commands.

 Visual3D is continuously updated with new features and enhancements so keeping up with the latest download you will be sure to have access to the latest bug fixes, new features and enhancements.

Folder Encryption

Performance Changes

#A 64 Bit version of Visual3D

- This will resolve issues for users with large CMO's that often hit the “Out of Memory” error

#New CMZ file format for saving files

- Faster file open times

#Performance enhancements for faster model building and IK computations times #Multithreading #Library Enhancements:

- Segment animation
- Ability to create new Link Model Based items

#Incorporate CalTester+ force platform corner location into Visual3D #Inverse Kinematics Enhancements:

- Motion Constraints
- Boundary Conditions
- C3D files are processed simultaneously for much faster processing times

Interface Changes

#Easier report editing with tabbed design. More changes currently in the works for future releases #Support for 4K monitors #Many real time streaming enhancements and features for RT biofeedback #Enhanced graphs with many improvements such as smoother lines and better scaling #New interface enhancements and toolbar icons

- Will also fix print to PDF issues for some users when printing dotted lines

#Modeless dialog capability for using common dialogs while working in other dialogs simultaneously #Event Sequence definitions to simplify specifying and modification of ranges throughout Visual3D

1. Auto Baseline for improved treadmill force results
2. Locate Force Platform Corners
3. Reset Segment Assignment to Force and COP
4. Compute Confidence Ellipse (old name Compute Trajectory Ellipse)
1. Get Pipeline Parameter Index Value
2. Expression Loop (now conditional_Statement)
3. New biofeedback animation commands
4. Export Signals to XML Graph
5. Set Text Item to store text information
6. Commands to secure data by the use of

#Color coded text editor for the pipeline #The Query function was added to the Reports #Copy Landmark feature

Event Creation

New/Modified Commands (click to expand)

 Event_Define_Event_Sequence - Event Sequences can be used to define sequences of events such as right stance, or the first 20 cycles. Event sequences can then be used in place of events in subsequent processing.

 When defining maximums & minimums in Visual3D, a new parameter was added which allows users to define the threshold. This parameter was added for the following commands: *Event_Global_Maximum *Event_Global_Minimum *Event_Maximum *Event_Minimum

Event Management

New/Modified Commands (click to expand)

 Event_Sequence_Delete - Event Sequences can be used to define sequences of events such as right stance, or the first 20 cycles. Event sequences can then be used in place of events in subsequent processing.

File Management

New/Modified Commands (click to expand)

 Create_Text_Data - Text Data is a new “Signal Type” which was added to the data tree. This allows users to define strings in the CMO file. For example, a signal can be created called “Affected_Side” and the user can specify the Left or Right side here. Files can be queried using text data as well.

Force

New/Modified Commands (click to expand)

 FP_Auto_Baseline - This command can be used to automatically determines the zero period and the force platform minimum value. This is especially helpful for treadmill trials when it is difficult to determine a period when the treadmill is unloaded and for front to back treadmills where a high force platform minimum value can cause discontinuity in the force signal.

 Locate_Force_Platform_Corners

 Modify_One_Force_Platform

 Reset_Segment_Assignment_To_Force_And_COP

Matlab

64 bit Matlab support. #Put_To_Matlab #Get_From_Matlab #Eval_In_Matlab

Certain Matlab commands are only available in the 64 bit version. Matlab no longer supports 32 bit installations, so legacy support will only be available in the 32 bit version of Visual3D.

Metric

New/Modified Commands (click to expand)

 When defining maximums & minimums in Visual3D, a new parameter was added which allows users to define the threshold. This parameter was added for the following commands: *Metric_Maximum *Metric_Minimum *Metric_Time_of_Maximum_from_Event *Metric_Time_of_Minimum_from_Event *Metric_Time_of_Global_Maximum_from_Event *Metric_Time_of_Global_Minimum_from_Event

 Metric_Compute_Confidence_Ellipse

Model Based Data Computation

New/Modified Commands (click to expand)

Compute_Model_Based_Data parameters with added treadmill velocities

Pipeline Control

New/Modified Commands (click to expand)

 Get_Pipeline_Parameter_Index_Value

 Conditional_Statement
 Conditional_Statement_End

RT and Post Processing Biofeedback

New/Modified Commands (click to expand)

 Animated_Line

 Animated_Sphere

 Animated_Surface

 Animated_PolyLine

 Modify_RTGraph_Settings

Reports/Interactive Graphs

New/Modified Commands (click to expand)

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 Modify_All_Graphs

 Overlay_Report

Folder Functions

New/Modified Commands (click to expand)

 Add_Password_Protection_To_Folder

 Remove_Password_Protection_From_Folder

 Enter_Password_To_View_Folder_Data

Other

New/Modified Commands (click to expand)

 Open_Edit_Dialogs

 Map_Segment_Color_To_Signal_Value