VICON iQ 1.5

GLOSSARY

Aliases: Marker(s) assigned to be filled using a virtual point(s).

Analogue: Additional data recorded using dedicated analogue card in the Datastation, e.g.,
data from force plates or EMG measurements and audio.

Aperture: The opening in a camera, behind the lens, that controls the amount of light reaching the sensor plate. The size of the opening is measured in 'f-stop' numbers written in the form f/1.4, f/2.8 etc. The larger the number, the smaller the hole and the less light will enter the camera.

Associated Fill: Gap filling tool used by first selecting the marker with the gap(s) to be filled over a selected range of frames, followed by the multiple marker(s) to be used to gap fill. The number of associated Markers selected defines how the Associated Fill works:

1 Associated Marker:	Trajectory is fitted to the gap(s)
2 Associated Markers:	Trajectories are averaged and then fitted to the gap(s).
3 or more Associated Markers:	A RigidBody is used to regenerate the data across the gap.

If during the gap filling process, one or more of the associated markers also is occluded, the associated fill will still continue to operate, but fall back to the above rules.

Autolabel: A Vicon feature allowing the labeling of a subject without user interaction. Available through the Trial menu.

Blooming: Term used to describe the defocusing of a picture due to excessive brightness. In
Vicon this occurs when a marker is close to a camera with high sensitivity or the aperture is too large. The result may be misinterpretation of the marker as two markers. Solved by altering sensitivity and/or the aperture or possible by moving the camera.

BOB: Abbreviation of Break Out Box, a common name for a Camera Interface Unit. This
is used to connect up to three cameras to a single port on the Datastation

BodyBuilder: Vicon application for data editing and modeling. Soon to be superceded by iQ.

BodyLanguage: Scripting language used in BodyBuilder to create Kinematic models.

Burn-in window : A small window added to a reference output video signal that displays Timecode
or frame count and/or clapperboard information. Specified in Timecode setup.

C3D: Binary file format. C3D files are created whenever video data is reconstructed, labeled and saved. They may also contain analogue data and parameters.

Calibration Object: Objects comprising accurately spaced markers on a metal frame used to calibrate
the capture volume.

Calibration Volume: The volume determined by the camera calibration process.

Calibration Subject: Method used to store data about the subject in a session. The subject calibration
allows you to label subsequent trials automatically.

Calibration: Cameras Method used to measure the relative locations of all the cameras in the motion
capture studio. The calibration is subsequently used in reconstructing the three dimensional
motion from the combined data from every camera.

Calibrate Floor: Pipeline Operation in Vicon iQ 1.5 to adjust the capture volume (defined by global coordinate frame (L-Frame)) alignment based on a captured trial with markers positioned just on the floor plane of the studio.

Camera Interface Unit: This is used to connect up to three cameras to a single port on the Datastation.

Camera Health Check: Pipeline Operation in Vicon iQ 1.5, to check the status or health of the current camera calibration using only capture trial data. Simply load the TVD file into Vicon iQ 1.5. Reconstruct your data, and run this operation. Vicon iQ 1.5 will display red or green status lights for each camera, indicated possibly bad, or good calibration. You can repair cameras with a red light, by using the *Camera Resection* operation.

Camera Resection: Pipeline Operation in Vicon iQ 1.5, to automatically repair cameras that have bad health status. This operation works of Trial Data, and does not require a calibration wand wave.

Capture Space: The entire space available in your motion capture studio or laboratory.

Capture Volume: The actual amount of space in which you are able to capture data. It is the
intersection of the reconstruction and calibration volumes.

CAR: File that contains all parameters required for Vicon capture and reconstruction. In general these
 are changed using the System menu Setup commands.

Certainty: The function used for rigid bodies that controls the ratio of weighting that each rigid body has
on a f-curve when determining gap filling.

CG Plug-Ins: Modules used to facilitate the import of Vicon data into a number of third party
animation packages.

Context: A group of events that have something in common e.g., the left side or the right
side

Context Bar: Displayed below the Time Bar ruler in Workstation and Polygon. Displays events
and contexts.

CP: Calibration parameters file for a set of cameras. Created during camera calibration and used when
 data from these cameras is processed.

CRO: File that contains the coordinates of markers on calibration reference objects. Can contain information
 on several calibration objects.

CSM: Character Studio Motion Capture file. Created using the pipeline to export data to 3D Studio Max.

Datastation: Purpose built hardware which captures all camera and analogue data. This provides the link between the cameras and analogue devices and the PC running the Workstation software

Defragment: Command used to ensure that Workstation or BodyBuilder recognize that all
trajectories with the same label belong to the same trajectory. This is essential for some data editing options.

Depth of Field: The range of distance from the camera that is in focus. With a greater depth of
field more items both near and far from the camera are in focus.

Discontinuity: Phenomenon causing steep rise curves at the point of discontinuity. This is lessened in iQ
with the new reconstruction algorithm, fix discontinuity tool, and dynamic option in the virtual point fill tool.

Dongle: A hardware security device that must be plugged into the parallel port of your workstation PC before Vicon software may be used. Supplied to licensed users by Vicon Motion Systems.

DynaCal: The method used by the Vicon system to calibrate your capture volume.

Dynamic: Option used for virtual point gap filling to snap the virtual point to the frame before
a gap in an alias marker to eliminate gap filling discontinuity.

EBU: The European standard for Timecode. As defined by the European Broadcasting Union. In EBU mode the system expects cameras to be running at a multiple of 50Hz.

Eclipse: Vicon data management software. Eclipse is accessed through the data Directory
window in Workstation and Polygon.

ENF: Eclipse Node File. Contains all information about a specific node level in the Data Directory.

ENI: Eclipse Node Initialization file. These are the template files Eclipse uses for defining the hierarchy of nodes.
File also determines icons used in directory structure, the directory structure itself, as well as, options in
the directory structure pull down menus.

Event: An instantaneous action such as a 'foot contact' or a 'foot off'. The Detect Gait Cycle Events plug-in will automatically place these on the context bar (needs force plates and analogue hardware installed and configured).

Field: A moment in the time span of a trial. The number of fields per second is defined by the frequency of the cameras used in capturing data.
Frame: Analogous to a frame in a motion picture, this is synonymous with field except for
interlaced data, where a frame is composed of two fields (one even, one odd).

Gait Analysis: The study of human movement for medical purposes. Often uses force plates on
which the subject moves to measure the changes in force as the movement
occurs. These can be used to calculate changes in the joints. Vicon includes a set
of tools for recording and analyzing this data.

GenLock: Abbreviation of Synchronization Generator Locking. With the appropriate hardware
installed this allows the Datastation to be locked to other video equipment.

INI: Defines application wide characteristics independent of the user. This should not be edited by the user.
To be used by a specific version of Workstation software, the INI file has to be named the exact name as the
Workstation.exe file.

Interpolation: Filling a gap in a trajectory by calculating a smooth curve between the broken
ends.

Inverse Kinematics: The deduction of movements of segments from a desired result rather than a
measured motion. For example calculating the movements of leg segments with
the requirement that the feet do not move. Note that such a calculation may have
several possible results.

Iris: The part of the camera controlling the Aperture size. The graduations on the lens
barrel are defined in terms of the focal length of the lens divided by the diameter
of the aperture, the setting being referred to as the f-stop value.

Kin Fill: The fill tool which uses the Kinematic Model to regenerate occluded data across
multiple gaps. If the Kinematic Fitter has not been run, then this fill tool will run the
Kinematic Fitter first.

Kinematic Fitter: The process by which a Kinematic skeleton/model, is fitted to trial data.
The Fitting process attempts to fit the entire skeleton as one entity across the entire trial,
and converge (across time as well as across all markers) to find the minimum of error
between the Kinematic Modeled markers, and the real markers.

Kinematic Model: Mathematical description of a moving object.

Label: A name by which a point or trajectory is identified.

Linearisation: This is a process of correcting for distortions in the camera lens and variations in
the internal mounting of the camera sensor plate. The correction factor is
calculated as part of the volume calibration.

Marker: The retro-reflective spheres or hemispheres attached to your subject are called
markers.

Marker Set: The file listing the markers attached to the subject of motion capture. The file can
also include information about how the subject will be displayed in the workspace,
body segments and modeled data.

MKR: see Marker Set definition.

Mobius: The Vicon application for the artistic editing and manipulation of motion capture data.

Motorcycle Pose: Also called the Neutral Pose, this is sometimes used by the subject when
capturing a static trial. It aims to optimize the Autolabel function.

MPG: Movie file format used by Vicon, commonly known as MPEG. Should not be confused
 with video data – the data captured by the Vicon cameras.

OBD: Information file on fixed objects (such as furniture) in the Workstation workspace.

Ordered Fill: Gap filling tool that uses three markers (origin, long axis/x-axis, and roll) to create a local frame (local axes) to solve the occluded data. If the three markers chosen become collinear, data will not be filled.

Pipeline: The Vicon automation feature that allows selected procedures to take place following data capture. These procedures are selected in the Pipeline dialog
opened from the Trial Data Capture and Trial Types dialogs or directly from the Trial menu.

Plug-ins: Data processing modules accessed through the Pipeline in Workstation. Several
are shipped with Workstation though you may create your own using the Plug-in Software Development Kit (SDK).

Polygon: The Vicon data analysis and reporting tool.

Post-Triggering: Technique used to capture events that have already happened, for example when
trying to capture moves of subjects whose movement is difficult to predict such
as animals and children.

Preferences: Each Vicon application includes a Preferences command in the File menu. This
dialog allows you to customize the application you are using.

Priority: The order in which the virtual point creation in handled in the pipeline.

Reconstruction: The calculation of the position of a marker in three-dimensional space and the
linking of these points into a trajectory.

Reconstruction Volume: A user specified reconstruction parameter that specifies the space within which
the system will attempt to reconstruct marker data.

Replace Subjects: Tool and Pipeline Operation in Vicon iQ 1.5, to allow existing subjects in the 3D workspace to be replaced by a new subject, and to automatically associated the new subject with all matching trajectories from the previous existing subject.

Rigid Body: Group of markers selected in the Vicon iQ modeling mode that are used to fill gaps in other marker trajectories

contained in that group. Multiple rigid bodies can control gap filling for a single marker using the certainty function
for each rigid grouping.

Root: If a segment in an autolabel marker set is labeled Root then the autolabelling process will begin by identifying this segment. This often makes the process more effective.

Sample Skip: Used to reduce the amount of data captured. For example if your cameras run at
120Hz they capture 120 frames every second. Using sample skip setting the
video rate divider to 2 reduces the effective sample rate to 60 frames per second.
This is useful when capturing slow moving subjects, capturing for long periods,
using large numbers of subjects with many cameras or any other time when you
may wish to reduce the amount of data, perhaps if you have limited storage space.
Sample skip is set using the Trial Data Capture dialog and the Trial Types dialog.

Segment: In a kinematic model, body parts are represented by segments.

SMPTE: The world standard for Timecode, as defined by the Society of Motion Picture and
Television Engineers. In SMPTE mode the system expects cameras to be running
art a multiple of 30Hz.

SP: Calibration parameters file for a subject. Used for the autolabelling process.

Spike: A point that lies to one side of an otherwise smooth trajectory. Spikes often occur as a result of a poor reconstruction in a particular frame. Vicon iQ included intelligent Spike Detection tools.

Static Trial: A short capture during which the subject stands still. Used for setting up the Autolabel feature.

Subject Calibration: The process of creating or modifying a Subject for autolabelling purposes. This
allows the software to automatically label trajectories in the 3D Workspace.
A controller for viewing motion capture data, e.g., start and stop forward and
reverse playback.

Time Bar: The digital equivalent of the information printed along the edge of traditional motion picture film. This was introduced by the broadcast industry to allow clear identification of positional information (frame details) on magnetic videotape.

Timecode: Using Timecode with video and TVD data allows the user to obtain a more precise
reference for editing data. The 'code' is an eight digit number specifying hours,
minutes, seconds and frames.

Trajectory: The path though space followed by a marker. This information is stored in a C3D
file as a time-series of points with the same label. You can display a trajectory in
the Workspace window as a line through the position of a marker in the current
field. A trajectory may consist of a single uninterrupted path or as a number of
segments. The latter occurs when markers may be obscured from view.

TRC: TRC file format. A generalized file format for storing Marker/Trajectory only data. TRC is an ASCII format, and is a Track Row Column format.

Trial: A trial is an act of data capture. Also refers to resulting C3D file.

Trial File: File created in Vicon iQ that contains all the rigid body, virtual point, and kinematic
data. Can be used as a "work in progress"/intermediate file type prior to exporting C3D files.

TVD: Binary unprocessed data created when video data is captured. This is the data used for
reconstruction – which in turn produces the C3D file. Also created during camera calibration.

VAD: Binary unprocessed data file created when analogue data is captured.

Video Burn-in: A small window added to a reference output video signal that displays Timecode
or frame count and/or clapperboard information. Specified in Timecode setup.

Video Data: The data captured using the Vicon cameras and Datastation. Not to be confused
with that recorded using a digital video camera, which is referred to as Movie data.

VPI: Vicon Plug-In file written using C++ and the Vicon SDK that is a plug-in that performs a function
 in the pipeline.

Workspace: The three-dimensional space in which motion will be captured.

Wand: Device used for dynamic calibration of the Vicon system. A rod with two markers placed a fixed distance apart.

Virtual Point: Marker(s) created from other marker(s) or virtual points that are used for gap filling or creating
markers with desired offsets. Complex virtual point chains can be created to act as a filter on gaps filled
using the VP or to assist the ordered or associated gap fill tools.

Volume or Capture Volume: The 3D Workspace is used to view three-dimensional motion capture data. Most
Vicon applications have a workspace window.

VSK: Vicon Skeleton file. Created using the pipeline options VST calibrator pipeline option. This file is
needed to autolabel and kinematically fit in Vicon iQ. It takes the place of files like SP, MKR, KM,
KMT, and VSM. This file is also needed for running a subject in Real-time.

VST: Vicon Skeletal Template file. This file is used with the VST calibrator pipeline plug-in to create a
VSK from a C3D file.

Workstation: The software that controls the Datastation. This will be installed on a PC linked to
the Datastation via an Ethernet based Local Area Network. Note that many people also refer to the controlling PC as the Workstation.