

VICON Life Sciences

Analyse du mouvement 3D avec marqueurs

Les solutions VICON permettent d'avoir une connaissance approfondie du mouvement pour le sport, la biomécanique, la recherche et plus encore. Elles associent les caméras de capture de mouvement les plus performantes du marché à des logiciels puissants et flexibles pour vous permettre d'obtenir des informations précises et pertinentes.

VICON offre la solution de capture de mouvement la plus avancée et la plus personnalisable pour les applications cliniques sans dépendre de logiciel tiers. Les systèmes VICON sont utilisés pour étudier de nombreuses pathologies, allant par exemple de patients amputés aux personnes atteintes d'infirmité motrice cérébrale.

L'expertise de VICON en matière de capture optoélectronique du mouvement permet également aux utilisateurs dans le milieu sportif de suivre, d'analyser et d'optimiser le mouvement humain pour les athlètes de tous niveaux.

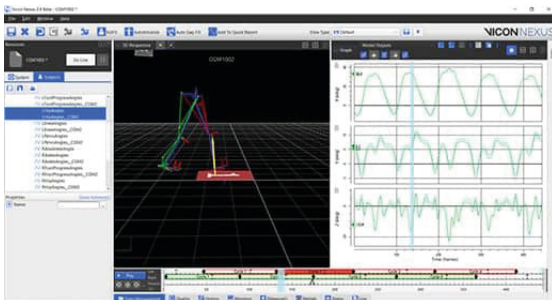
Quelle que soit votre activité, VICON vous offre le système sur-mesure adapté à vos besoins !



Caméra VERO



Caméra VALKYRIE



Les + produits

Gestion et préparation du système

La calibration et la configuration sont simples et rapides grâce à la détection automatique des gaps et l'auto labélisation

Modélisation et traitement des données

Créez et automatisez vos propres pipelines personnalisables et utilisez des modèles validés scientifiquement et cliniquement (PiG, CGM2). Utilisez vos propres scripts pour mieux comprendre vos données, créés en Python, MATLAB, Vicon ProCalc et Vicon BodyBuilder.

Intégration de Nexus Insight

Simplifiez le processus de reporting grâce à des outils intuitifs, une présentation claire et des résultats hautement personnalisables. Nexus Insight facilite l'interprétation, le partage et la comparaison des données, même si elles portent sur plusieurs sujets ou sur de longues périodes.

La caméra Véro, le meilleur compromis résolution/vitesse/prix

- Puissance : résolution et vitesse de pointe à un prix inégalé. Vero est équipé de capteurs embarqués qui informent et surveillent le fonctionnement de la caméra et la température
- Souplesse d'utilisation: conception compact permettant un montage facile, champ de vision optimisé grâce à l'objectif à focale variable, vision lointaine grâce au puissant stroboscope.
- Performances: avec une caméra 2,2 MPX à 330 Hz, elle permet la capture de mouvements très dynamiques avec une faible latence.
- Compatibilité : avec les séries T de Bonita ou Vantage ou Vicon Vue
- Large champ de vision avec Valkyrie, Vantage, Vue, T-series and Bonita : pour les clients qui ont besoin d'un grand volume dans les espaces les plus restreints, généralement pour suivre des personnes dans des CAVE VR, Vero v1.3 X a un plus grand champ de vision et suit les personnes de la tête aux pieds à des distances plus courtes

Model	V2.2	V1.3	V1.3X
Resolution (MP)	2.2 (2048x1088)	1.3 (1280x1024)	1.3 (1280x1024)
Max Frame Rate (Hz)	330@2.2MP	250@1.3MP	250@1.3MP
Standard Lens	6-12mm Varifocal	6-12mm Varifocal	-
Wide Lens	6-12mm Varifocal	6-12mm Varifocal	4mm Fixed Focal Lenght
Min Standard FOV(HxV)°	44.1 x 23.6 (tele)	27.2 x 21.8 (tele)	-
Min Wide FOV(HxV)°	98.1 x 50.1 (wide)	55.2 x 43.9 (wide)	79.0 x 67.6
Camera Latency	3.6 ms	3.4 ms	3.4 ms
Strobe	IR	IR	IR
Shutter type	Global	Global	Global
Connection type	Cat5e/ RJ45	Cat5e/ RJ45	Cat5e/ RJ45
Power	PoE	PoE	PoE
Max Power consumption	12W	12W	12W
Dimensions (HxWxD) mm	83 x 80 x 135	83 x 80 x 135	83 x 80 x 112
Weight (kg)	0.57	0.57	0.56
Updateable firmware	Yes	Yes	Yes

La caméra Valkyrie, pour une puissance inégalée

- Une résolution inégalée sur le marché (jusqu'à 26MPX)
- Un fonctionnement intuitif : visée et surveillance faciles, mode de prévisualisation vidéo complet à 30FPS pour simplifier votre travail
- Une caméra pour tous les environnements : capture possible dans tous les types d'environnements avec une caméra IP65
- Un objectif conçu avec précision : objectif varifocal pour augmenter la portée et la précision
- Des vitesses exceptionnelles : vitesses natives jusqu'à 500FPS et jusqu'à 2000FPS avec utilisation de techniques de fenêtrage

	VALKYRIE VK26	VALKYRIE VK16	VALKYRIE VK8
FPS full frame	150	240	500
RES (MP)	26.2	16.1	8.0
H FoV (wide)	72	72	72
V FoV (wide)	72	46	42
H FoV (narrow)	54	54	54
V FoV (narrow)	54	35	30

VICON

Leader mondial des solutions de capture de mouvement depuis plus de 35 ans, Vicon est une société anglaise qui fournit des systèmes d'analyse du mouvement pour les sciences, le divertissement et la réalité virtuelle

Médimex

ÉVALUATION – RÉÉDUCATION – PERFORMANCE

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07 2024

A young boy is standing in a laboratory or motion capture studio. He is shirtless and wearing dark blue shorts with a small logo on the left leg. He has several small black markers attached to his head, neck, chest, arms, and legs. He is holding his right leg up towards his chest with his right hand. His arms are extended horizontally to the sides. The background is dark blue with a large, semi-transparent orange 'X' shape. The floor is covered with a grid of green and black squares. The text 'BEYOND MOTION' is overlaid in white, bold, sans-serif capital letters.

BEYOND MOTION

THE MOST TRUSTED MOTION CAPTURE ECOSYSTEM, INSPIRED BY YOU

Over 90% of our product enhancements are driven by direct customer feedback, creating a software designed specifically for the life science community. **Nexus delivers precise, repeatable and clinically validated model outputs. This powerful, all inclusive, modeling and processing tool will simplify your workflow for movement analysis.**

Read to learn more about the features and benefits included in the latest version of Nexus. We've also included insights from Dr. Fabien LeBoeuf (Nantes Hospital, France and Research associate, University of Salford, UK) on the latest improvements to the Conventional Gait Model.

nexus

noun

1. a connection or series of connections linking two or more things. "the nexus between industry and political power"
2. a central or focal point



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6	Benefits
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18	Valkyrie comes to Nexus
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WHO IS NEXUS FOR?



GAIT ANALYSIS & REHABILITATION



- Doctors & surgeons
- Military
- Physiotherapists
- Clinical scientists
- Postgrad research
- Undergrad teaching

NEUROSCIENCE & MOTOR CONTROL



- Clinical scientists
- Doctors & surgeons
- Postgrad research
- Undergrad teaching
- Physiotherapists

ANIMAL SCIENCE



- Veterinary doctors
- Researchers
- Trainers
- Postgrad research
- Undergrad teaching

SPORTS PERFORMANCE & BIOMECHANICS



- Performance analysts
- Commercial research
- Strength & conditioning
- Postgrad research
- Undergrad teaching
- Physiotherapists
- Coaches or trainers

Navigate and analyze your data faster to focus on your research, not the software.



CUSTOMIZABLE YET SIMPLE WORKFLOWS TO SAVE TIME

- Create a series of steps with the Biomechanics Workflow Builder to combine data collection and offline processing, making it simple to get started with the SCoRE and SARA Functional Calibration.
- Use offline Python/MATLAB capabilities.
- Review labeling quality and automatically detect and fill gaps.
- Manage your data via Vicon's database management tool, ProEclipse.

90%

of our life sciences software enhancements are from customer feedback



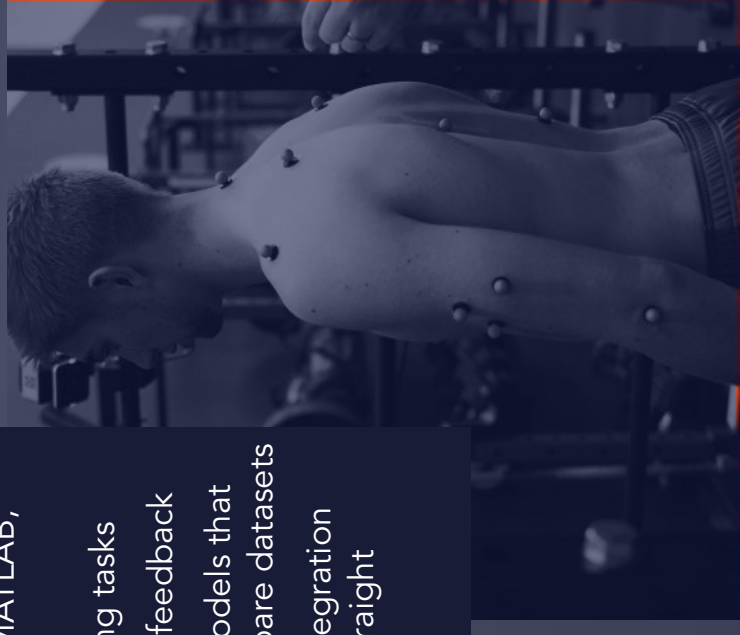
TRUSTED TO DELIVER CLINICALLY VALIDATED MODEL OUTPUTS

- Precise and repeatable data capture
- Camera calibration feedback helps to achieve consistent calibrations in the lab, to maintain data standards



POWERFUL ANALYSIS AND DATA MODELING

- Process data using scripts created in Vicon BodyBuilder, Python, MATLAB, and Vicon ProCalc
- Automate common processing tasks
- Receive real-time calibration feedback
- Use native PiG and CGM2 models that can run concurrently to compare datasets
- Set up your Nexus Insight integration to analyze and report data straight from Nexus

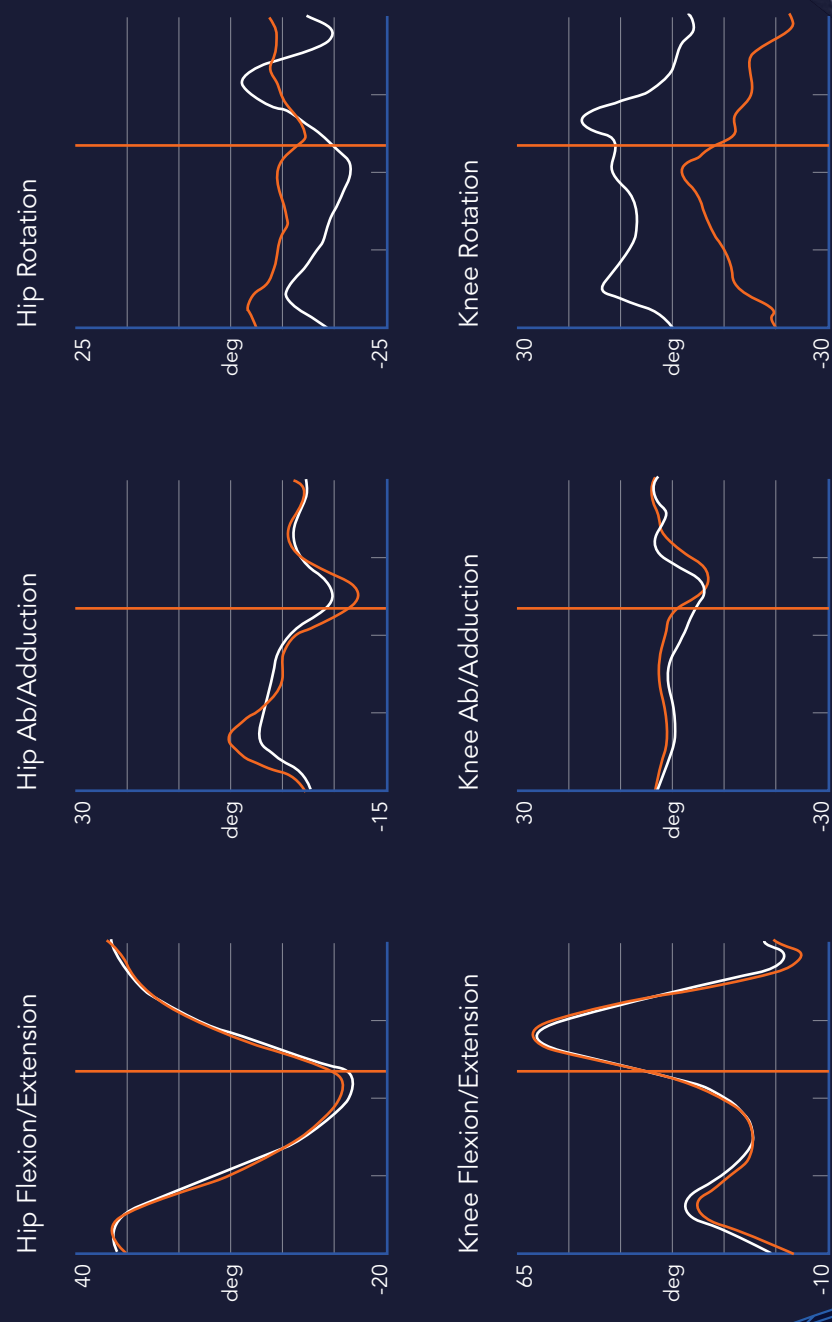


UPDATING THE CONVENTIONAL GAIT MODEL FOR THE MODERN WORLD

"The CGM2 project aims to address the limitations of the CGM while maintaining its strengths"

Dr. Fabien LeBoeuf

Plug-in Gait v CGM2 Kinematics (Left context only displayed)



PLUG-IN GAIT

CGM2

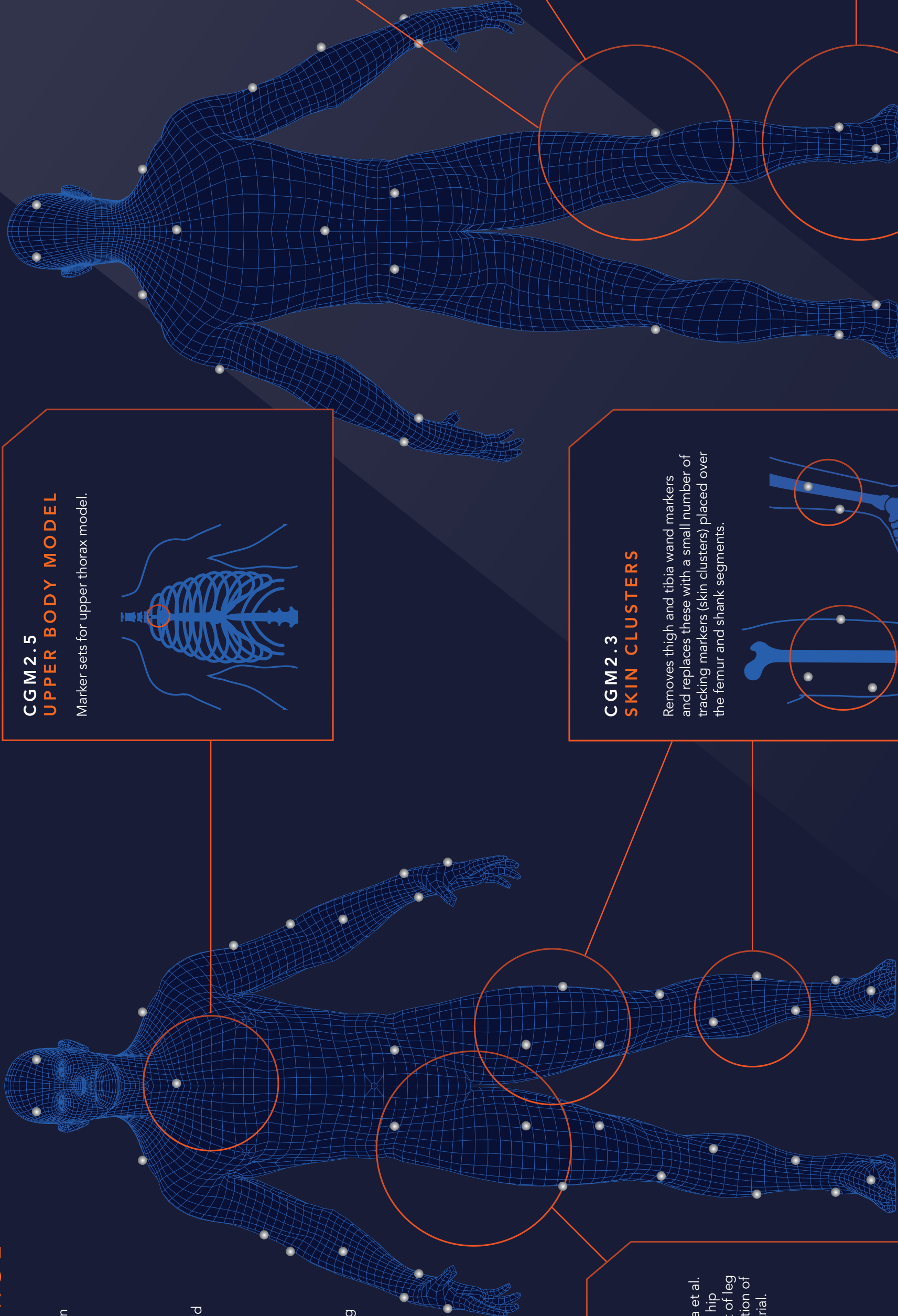
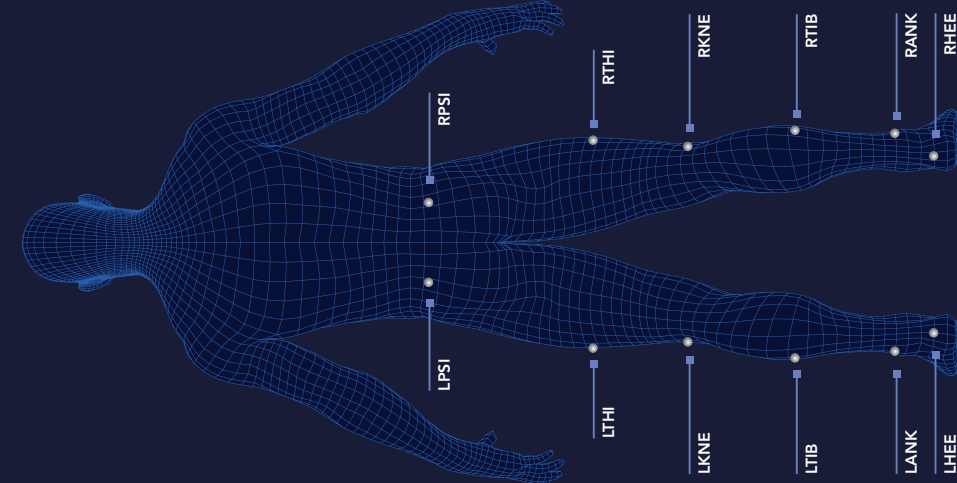
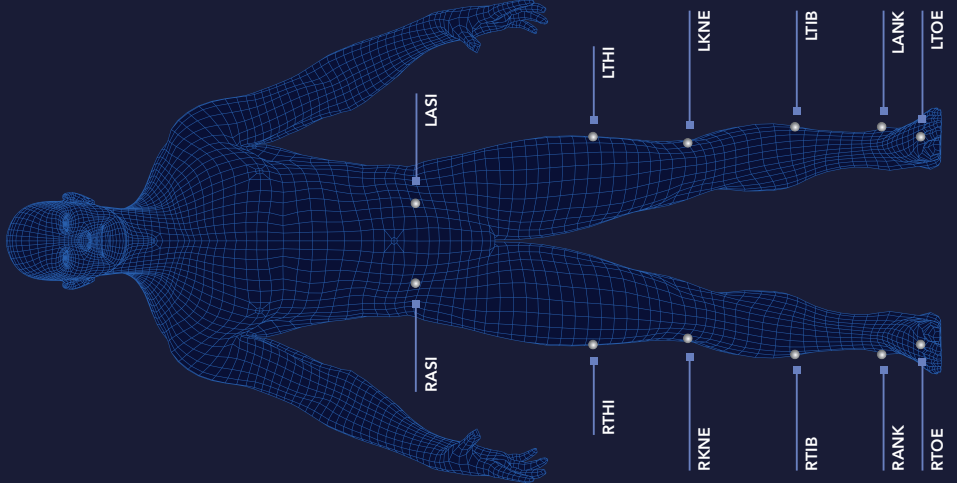
THE CONVENTIONAL GAIT MODEL 2 – CGM2 – IS AN OPEN SOURCE IMPLEMENTATION THAT REPRODUCES THE PAST, BUT PREPARES FOR THE FUTURE.

The CGM2 project updates the Conventional Gait Model for the modern world. Developed in a series of iterations, the project develops and validates an evolution of the CGM, which maintains its strengths and corrects its limitations.

Vicon has been privileged to work on this project with Dr Fabien LeBoeuf together with the staff at the Hugh Williamson Gait Analysis Laboratory at the Royal Children’s Hospital in Melbourne, who helped collect the data for the study.

The project’s findings have led to the creation of CGM2 – a combination of Vicon PiG and CGM features – to create a complete upper and lower body gait analysis model.

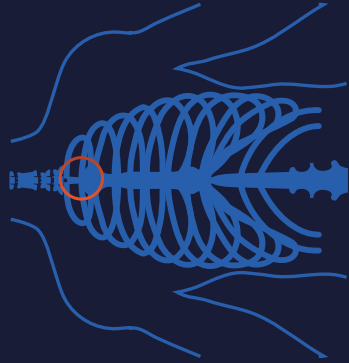
CGM 1.0 / 1.1



CGM2.5

UPPER BODY MODEL

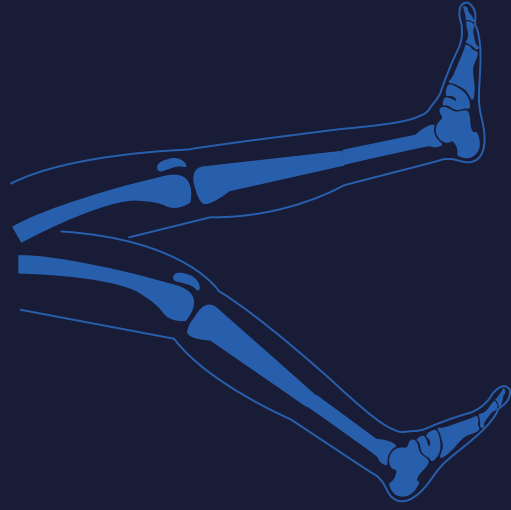
Marker sets for upper thorax model.



CGM2.2

INVERSE KINEMATICS

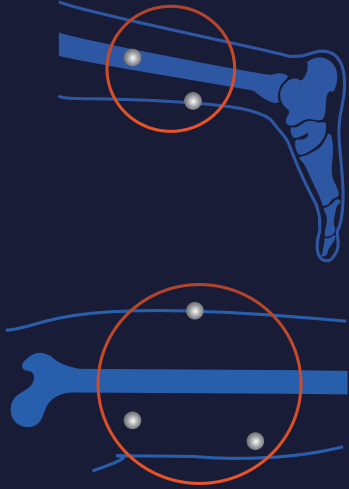
Calibrates a rigid segment model to the data captured during a static trial and then uses inverse kinematics to track marker trajectories captured during the walking trial.



CGM2.3

SKIN CLUSTERS

Removes thigh and tibia wand markers and replaces these with a small number of tracking markers (skin clusters) placed over the femur and shank segments.



CGM2.1

HIP JOINT CENTER ACCURACY

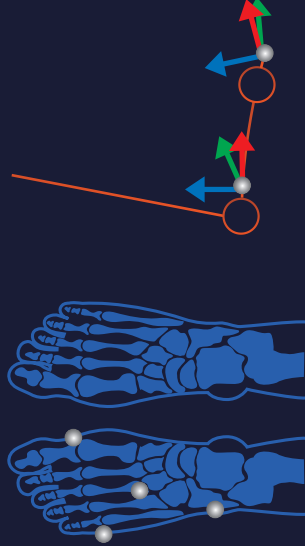
Uses the regression equations of Hara et al. (2016) to estimate the position of the hip joint center based on a measurement of leg length taken from the measured position of markers during the static calibration trial.



CGM2.4

EXTENDED FOOT MODEL

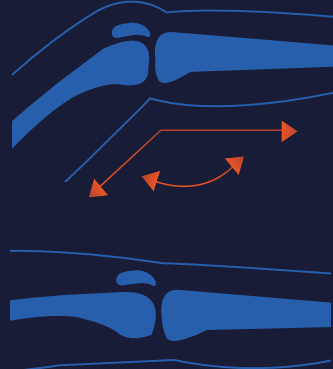
Introduces a two-segment foot model, where the rear foot model is an adaptation of the CGM foot segment, and a new, additional forefoot segment is added.



CGM2.6

KNEE CALIBRATION

Incorporates functional calibration of the knee joint based on a dynamic functional calibration test conducted after static calibration but before fitting the model to walking trials.



“The CGM2.1 project is an open source implementation that reproduces the past, but prepares for the future.”

Dr. Fabien LeBoeuf

WHAT MAKES NEXUS UNIQUE?

MANAGE & PREPARE YOUR SYSTEM

Easily calibrate and configure the system. Seamlessly connect mobile devices via the Vicon Control app. Prepare subjects by creating templates and calibrating pipelines, to allow **data capture away from your desk**.

The data-processing engine automatically initializes the labeling of your subject, removing the need to label manually. Nexus can **automatically detect gaps and display information about labeling quality**, enabling quick data correction if needed.

AUTOMATE PROCESSING OPERATIONS

Save time with highly customizable, automated processing operations. You can review your processing history and quickly pull off reports. **Create custom pipelines for common processing tasks**.

With direct native pipeline integration, you can process data using scripts created in Python, MATLAB and Vicon ProCalc.

CAPTURE & REVIEW MOVEMENT

Nexus enables you to capture movement, review trials, assess foot strikes and review data quality.

Perform modeling, using PiG, CGM2 the Oxford Foot Model, or your own model. Input subject measurements for PiG or full body analysis.

Incorporate external integrations such as EMG, force plates, and inertial sensors.

Save time by creating custom and automated pipelines for data processing and analysis. Use scripts to provide further insights into your data created in Python, MATLAB, Vicon ProCalc and Vicon BodyBuilder. With direct integration, you can **review data directly into Vicon's newest reporting tool, Nexus Insight**.



INTEGRATION

Nexus can seamlessly integrate with Vicon's market-leading IMU, Blue Trident. It's wireless network device, Beacon, allows seamless synching across data types. By adding inertial sensors into the optical world, you can utilize and compare optical and inertial data in one platform.

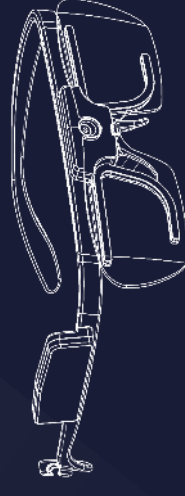
Global angles are available on the Blue Trident sensor. Using OpenSense integration, joint angles can be calculated.

OPEN SOUND CONTROL INTEGRATION

Open Sound Control is the protocol for communication among computer and sound synthesizers for networking technology. Nexus provides options for streaming data in OSC format, enabling live synchronized or offline. Data can be accessed by any platform that supports OSC for real-time control of sound and other media processing.

TOBII EYE TRACKER INTEGRATION

Tobii's latest eye tracker is integrated into Nexus, enabling streaming of synchronized eye-gaze tracking with optical data.

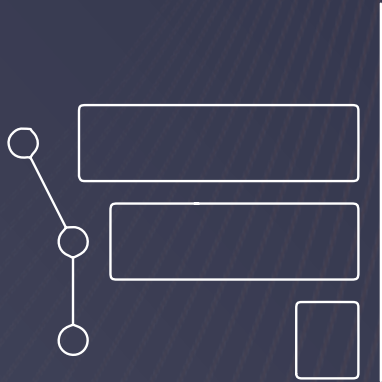


INTRODUCING NEXUS INSIGHT

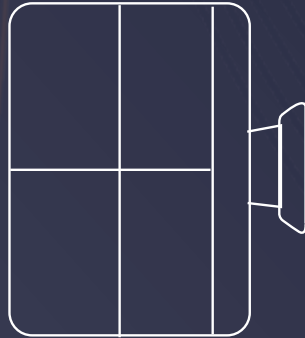
EFFICIENT, INTUITIVE REPORTING

SIMPLIFY YOUR REPORTING

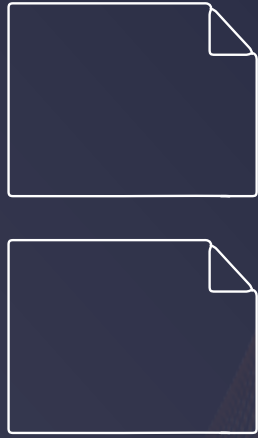
Adding a Nexus Insight integration to your workflow simplifies the reporting process with intuitive tools, clean presentation and highly customizable outputs.



Graph data imported directly from Nexus



Switch to a customizable, quadrant-based layout with 3D, videos and chart components



Create custom-made reporting templates or use our existing examples



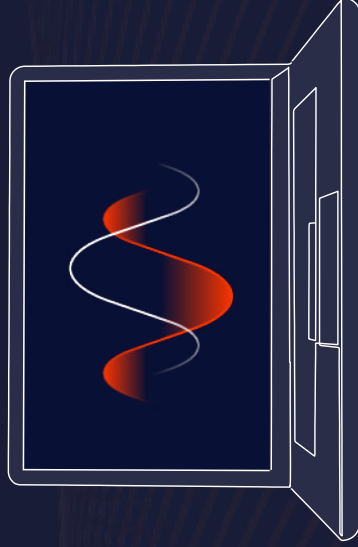
Import and compare reference data

CLARITY, ADAPTABILITY AND ACCESSIBILITY FOR BIOMECHANICS AND RESEARCH

Nexus Insight allows you to tailor your reports to demonstrate the information that you need. Whether you choose our automated tools or create your own templates, Nexus Insight makes it easier to interpret, share and compare data, even if it is across multiple subjects or over long periods of time.

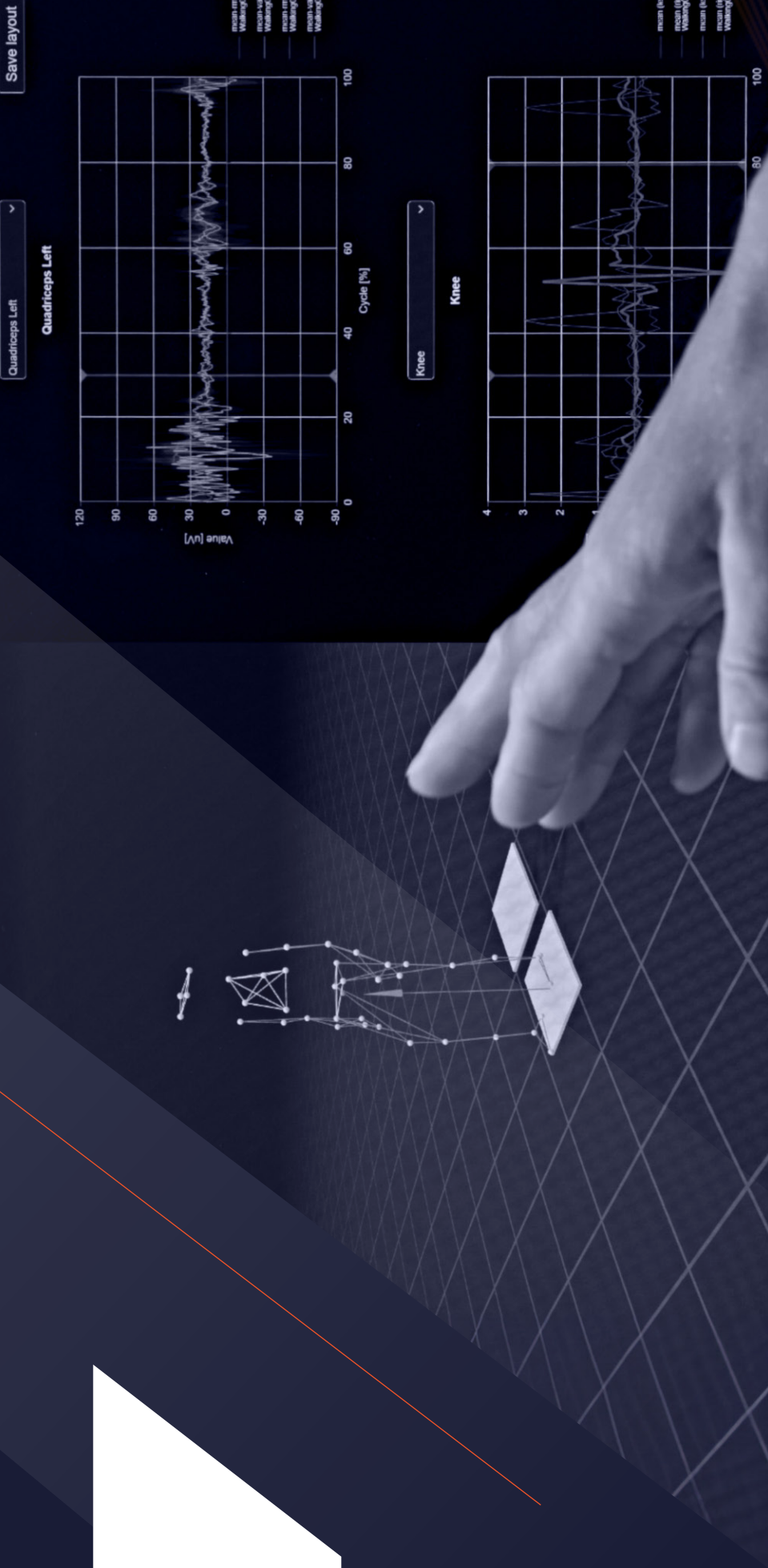
Nexus Insight empowers biomechanical researchers and educators to take control of their data. Through a local installer, users can present their data without internet access for a secure and new accessible way to report.

Nexus Insight is a bespoke reporting tool for life sciences. It has been built within the community to simplify, save time, and make data comparison effortless, all within Viccon's leading motion capture ecosystem.



POWERED BY
MOVESHELF

Vicon has partnered with Moeshelf to develop Vicon's powerful new reporting tool, Nexus Insight. By combining the tried and tested technology that powers the Moeshelf Information System and Vicon's market-leading life sciences expertise and ecosystem, Nexus Insight brings you efficient, intuitive reporting.



VALKYRIE COMES TO NEXUS

SEE FARTHER AND FASTER

Nexus incorporates all variants of the Valkyrie camera, Vicon's best-in-class camera family for movement analysis.

CONFIDENCE IN HIGH-FIDELITY CAPTURE

Valkyrie pushes the boundaries of motion capture in the life sciences with unbeatable **range, speed and field of view**.

Valkyrie offers unprecedented levels of detail with pixel counts of up to **26MP**, capturing complex structures with extraordinary fidelity. Recording speeds up to **2000FPS** enable users to track incredibly fast-moving subjects such as athletes.

The camera's unique, custom-designed varifocal lens optimizes performance, no matter the application. Its wide, center and narrow field of view options can be combined within your setup to ensure the best possible coverage for your data capture. The combination of Valkyrie's IP65 rating and incredible range makes capturing subjects in their natural environments easier than ever.

FREE UP YOUR VALUABLE TIME

Valkyrie is engineered from the ground up to minimize its demands on your time. That means you can focus on what matters: your data and your subjects.

Even if you need to move your system for a project based out in the field, you can begin your session quickly. **Valkyrie's 30FPS full video preview mode makes camera aiming fast and accurate**, no matter the environment.

Once you're set up, the robustness of Valkyrie's tracking and calibration combines with clear display features to allow you to focus on your project.

After your trial, the high quality data combined with **Valkyrie's internal camera intelligence minimizes cleanup time and processing**. Partnered with Nexus's trusted ecosystem, your motion capture experience will be streamlined and efficient.



A PRECISION-ENGINEERED LENS

Valkyrie includes a new, custom-built varifocal lens to increase range and precision.



INCREDIBLE SPEEDS

Valkyrie's native speeds go up to 500FPS, and as high as 2000FPS when using windowing techniques.



MARKET-LEADING RESOLUTION

With a resolution of 26MP Valkyrie offers unparalleled clarity.



INTUITIVE OPERATION

At 30FPS, Valkyrie's full video preview mode is Vicon's smoothest yet for easier camera monitoring.



A CAMERA FOR ANY ENVIRONMENT

With Valkyrie, you can capture any movement in any environment, safe in the knowledge that your camera is IP65-rated.

For more information visit our website or contact us.

vicon.com/lifesciences

vicon.com/nexus

vicon.com/nexusinsight



S H O R T C U T S

NEXUS SHORTCUTS

F1	Vicon Nexus help
F2	Data management
F4	Quick Reports window
F5	Full screen
F6	Sounds dialog box
F7	Options dialog box
F8	System Preparations Tools pane
F9	Subject Preparation Tools pane
F10	Capture tools pane
F11	Label/Edit Tools pane
F12	Pipeline Tools pane

NEXUS HOTKEYS

Ctrl+Enter	Start / stop capture
Ctrl+Tab	Switch live / offline mode
Ctrl+Space	Display/Hide marker labels
Ctrl+ ←	Move to previous event
Ctrl+ →	Move to next event
Ctrl+Z	Undo
Ctrl+Y	Redo
Ctrl+S	Save trial
Space	Pause / restart real-time data streaming
Space	Play / stop offline data
Esc	Exit current mode (labeling, etc.)

MOUSE ACTIONS

Right-click and drag	Zoom 3D space
Left-click and drag	Rotate 3D space
Left and right-click and drag	Move 3D space
Left-click	Select individual item
Ctrl + click	Select several items
Alt + click and drag	Select individual item