



VIRTUAL ERGONOMIC VERIFICATION FOR THE MANUFACTURING SECTOR

THE FORTUNE 100 ENTERPRISE TECHNOLOGY
IS NOW AVAILABLE FOR YOU IN THE CLOUD

WHAT IS VIVELAB ERGO?

ViveLab Ergo is an ergonomic lab in the cloud for modelling objects, machines and human beings moving together in a virtual 3D space. Thanks to its massive anthropometric database and built-in analyses it precisely simulates, analyzes and validates human interactions with industrial and other environments.



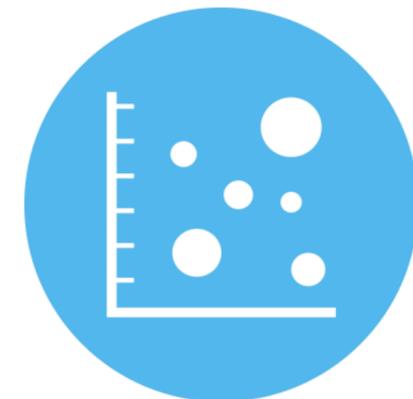
WHY TO DO ERGONOMOMIC VERIFICATION IN THE MANUFACTURING SECTOR?



SOLVE LABOR
ISSUES



INCREASE
EFFICIENCY



KEEPS UP WITH
FUTURE

SOLVE LABOR ISSUES

- Reduce absenteeism for health reasons (e.g. musculo-skeletal-disorders)
- Reduce the risk of accidents
- Reduce fluctuation through better working comfort
- Facilitate recruitment involving more age groups, women and disabled people

INCREASE EFFICIENCY

- Lowers costs (eg.: costs arising from sick leave, fluctuation, training)
- Lowers the number of unoccupied workstations
- Lowers cycle time and the number of faulty products
- Optimize workflows



KEEPS UP WITH DEVELOPMENT

- Virtual verification guarantees the ergonomic compliance of new workstations in the design phase without prototype production
- Checks the insertion of transferable tools/workstations
- Assists in organizing shifts using profile comparison
- Helps to identify the automatable workplaces
- Helps to coordinate the human – machine – environment system

VIVELAB ERGO DETAILS

THE CORE VIVELAB ERGO CONCEPT

- Providing a software solution running in cloud
- Full-automated, easy manageable even by non-ergonomists
- Allows predictive decision elaboration based on simulation
- Does not require investments hereby easily accessible for even SMEs
- Builds a large scale of potential value added services for the consulting and reseller partners

PRODUCT FEATURES I.



3D VISUALIZATION

Upbuild manually or import your own virtual environment with moving machines and robots!



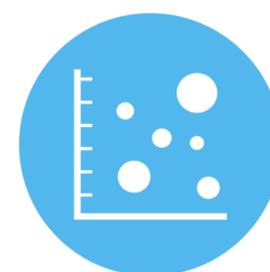
ACCURATE ANIMATION

Build precise human movements manually or import XSENS movement files!



BUILT-IN ANALYSES

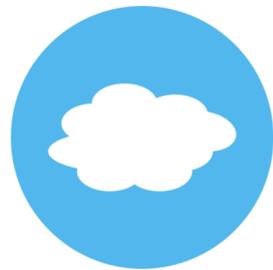
Use seven professional analyses (RULA, OWAS, NASA-OBI, ISO 11226, EN 1005-4, reachability zone, spaghetti diagram), both real-time and PDF reports!



HUMAN ANTHROPOMETRIC DATA BANK

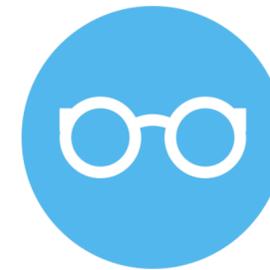
Analyze segments based on age, sex, race and body composition. Consider changes of populations during upcoming decades!

PRODUCT FEATURES II.



CLOUD BASED

You can use ViveLab Ergo anytime, anywhere, all you need is internet access



EASY-TO-LEARN

Due to the latest GUI design principles ViveLab Ergo provides an intuitive way of exploring itself.



AVAILABLE SERVICES

There is an experienced team of ergonomists behind the product.

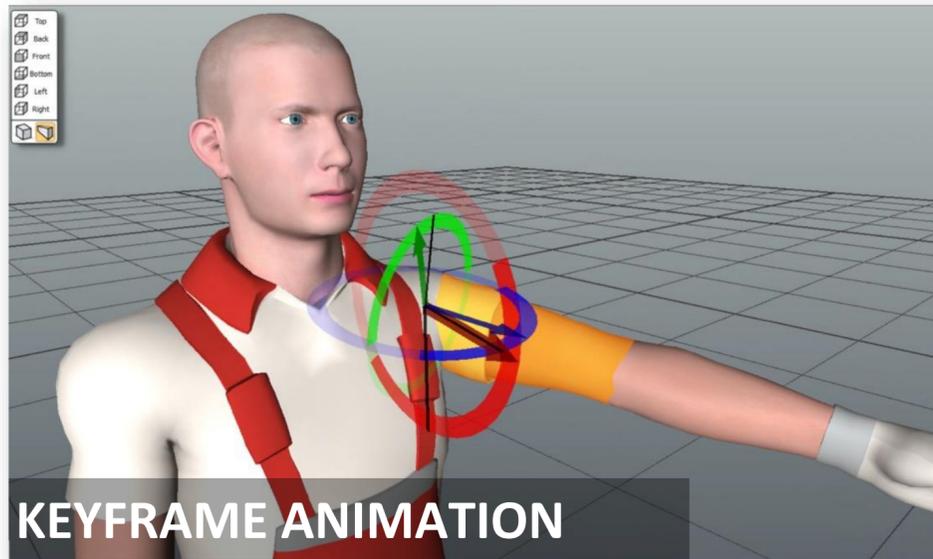


COLLABORATION

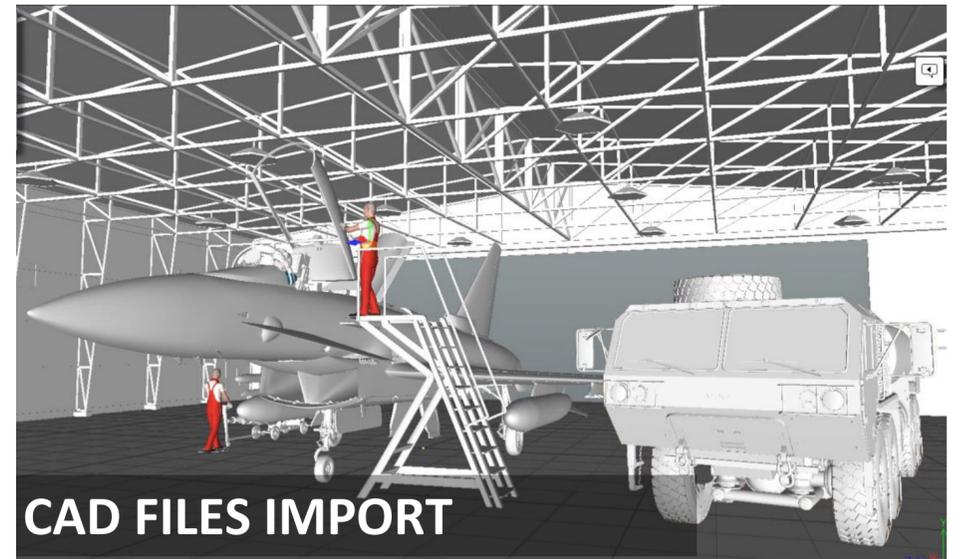
You can invite and collaborate with colleagues and agencies from all around the world while working on your project.



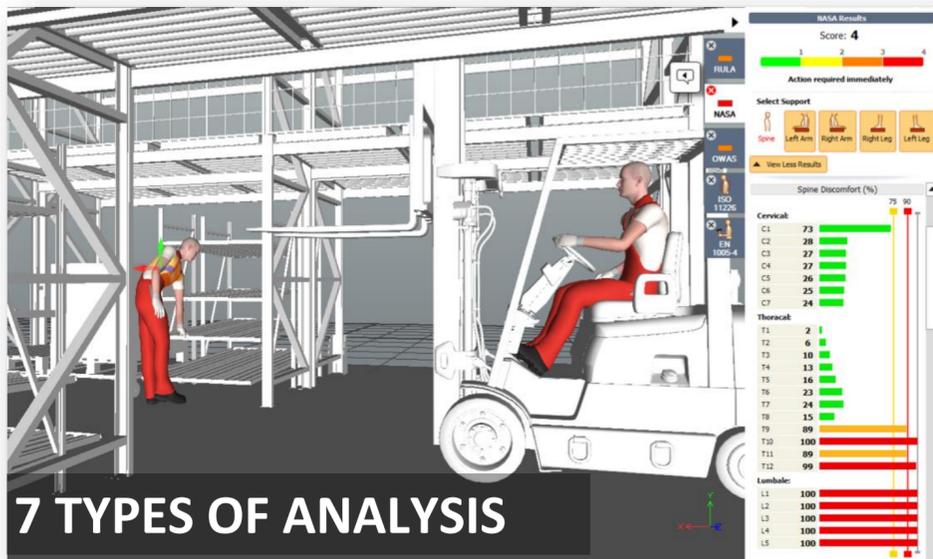
MOTION CAPTURE FILES IMPORT



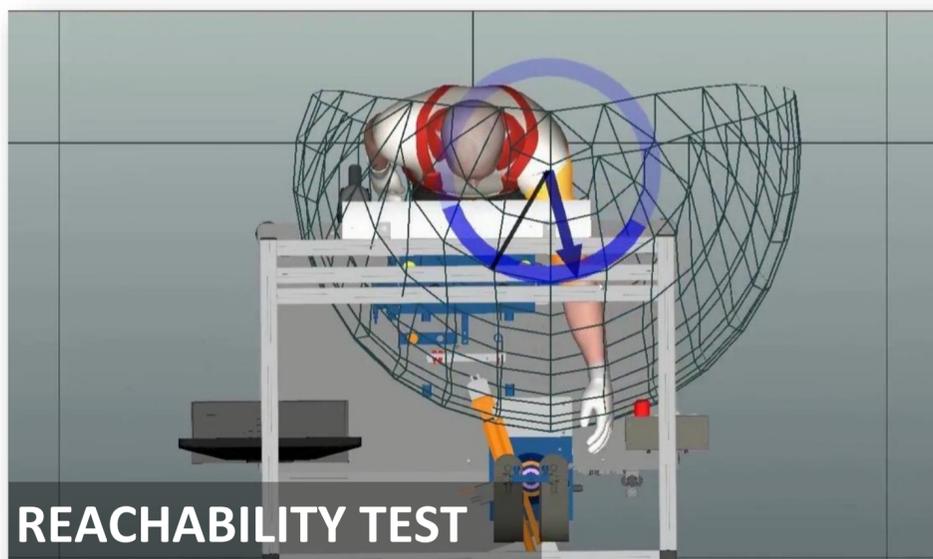
KEYFRAME ANIMATION



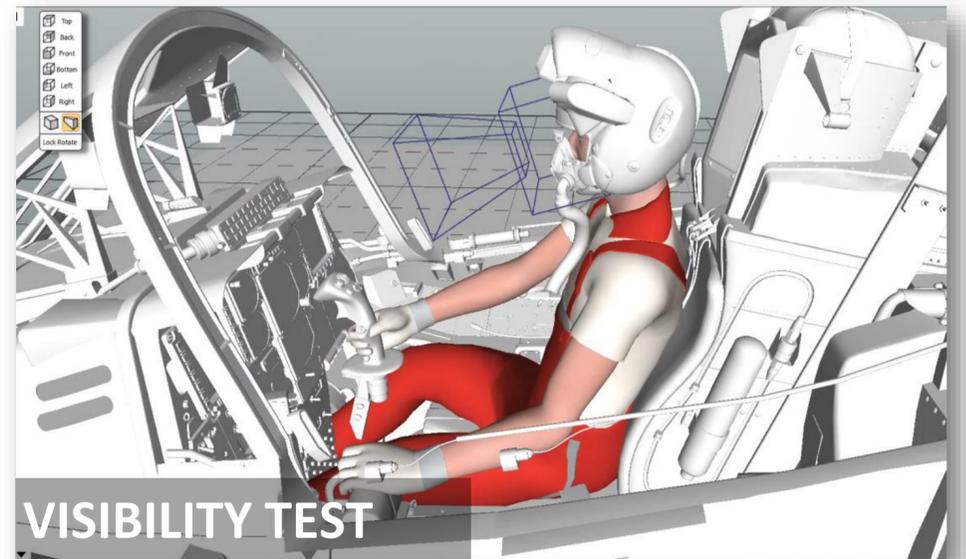
CAD FILES IMPORT



7 TYPES OF ANALYSIS



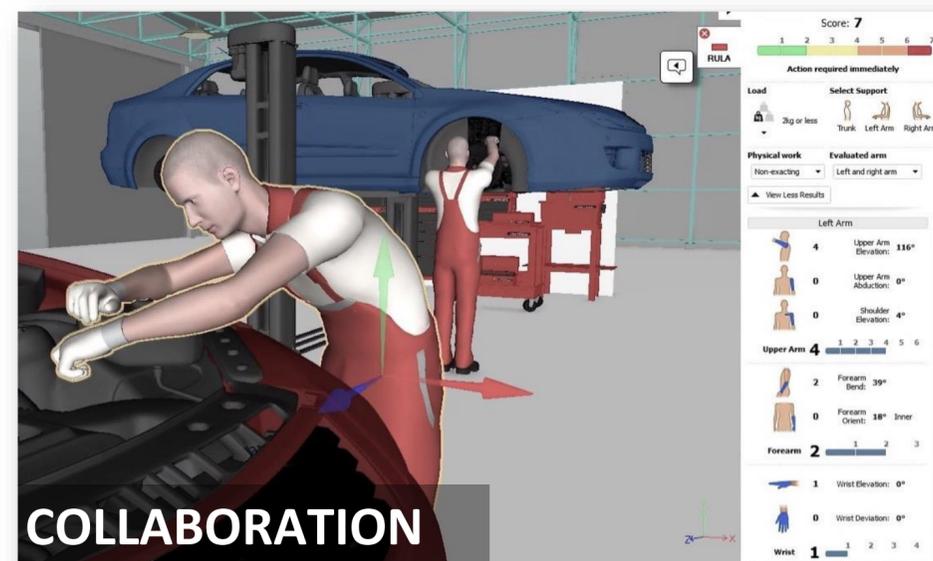
REACHABILITY TEST



VISIBILITY TEST



SPAGHETTI DIAGRAM



COLLABORATION

RULA analysis detailed results Human 1

Time:	7s 139ms
Load:	2kg or less
Physical work:	Non-exacting
Evaluated arm:	Left and right arm
Trunk support:	No
Left arm support:	No
Right arm support:	No
Evaluation score:	6

Further investigation, change soon

Left Arm		Right Arm	
Upper Arm Elevation: -11°	Upper Arm Elevation: 99°	Upper Arm Elevation: 99°	Upper Arm Elevation: 99°
Upper Arm Abduction: 28°	Upper Arm Abduction: 0°	Upper Arm Abduction: 0°	Upper Arm Abduction: 0°
Shoulder Elevation: 6°	Shoulder Elevation: 22°	Shoulder Elevation: 22°	Shoulder Elevation: 22°
Forearm Bend: 61°	Forearm Bend: 8°	Forearm Bend: 8°	Forearm Bend: 8°
Forearm Orientation: 46°	Forearm Orientation: 0°	Forearm Orientation: 0°	Forearm Orientation: 0°
Wrist Elevation: 0°	Wrist Elevation: 7°	Wrist Elevation: 7°	Wrist Elevation: 7°
Wrist Deviation: 0°	Wrist Deviation: 0°	Wrist Deviation: 0°	Wrist Deviation: 0°

ANALYSIS REPORT EXPORT

ISO11226 evaluation results Human 1

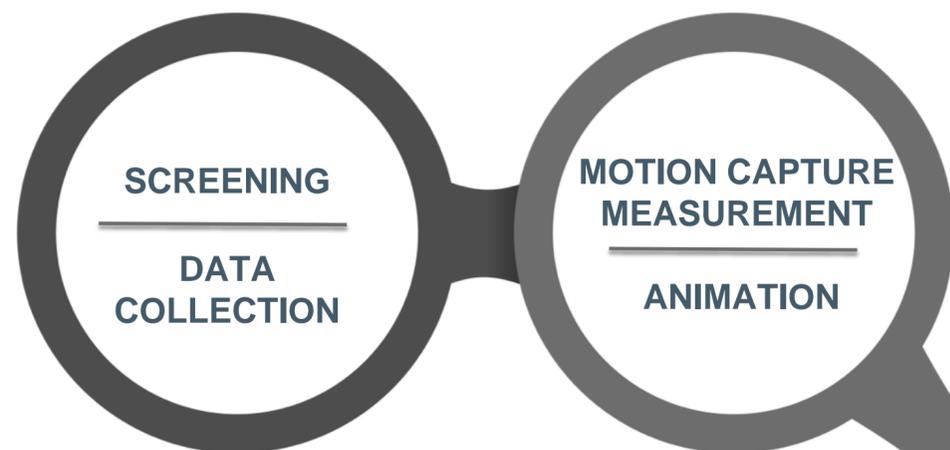
Start time:	0s
End time:	24s 100ms
Supports:	None

Not acceptable

Critical Postures	Average Angle	Starting Time	Holding Time
1 Asymmetric trunk posture (axial rotation) for more than 4s	21°	0s	5s 300ms
2 Neck flexion is >25° for more than 4s	30°	0s	4s 900ms
3 Asymmetric trunk posture (lateral flexion) for more than 4s	15°	3s 900ms	7s 100ms
4 Right upper arm elevation is <-60° for more than 4s	92°	5s 200ms	5s 100ms
5 Right shoulder is raised for more than 4s	19°	5s 300ms	4s 800ms
6 Neck flexion is >25° for more than 4s	33°	5s 500ms	5s 500ms
7 Head inclination is <-60° for more than 4s	89°	5s 700ms	4s 600ms
8 Left wrist radial abduction is <-20° for more than 4s	21°	5s 700ms	4s 100ms
9 Neck flexion is <-25° for more than 4s	34°	11s 200ms	5s 500ms
10 Asymmetric trunk posture (axial rotation) for more than 4s	17°	14s	6s 700ms
11 Asymmetric trunk posture (lateral flexion) for more than 4s	12°	14s 100ms	6s 300ms
12 Left upper arm elevation is <-60° for more than 4s	95°	14s 200ms	6s 600ms
13 Left shoulder is raised for more than 4s	12°	14s 300ms	6s 400ms
14 Asymmetric neck posture (axial rotation) for more than 4s	18°	14s 500ms	6s
15 Trunk inclination is <-60° while the trunk is not supported for more than 4s	64°	15s 100ms	4s 800ms
16 Left elbow extension is <-60° for more than 4s	-12°	15s 600ms	4s 800ms
17 Right upper arm elevation is <-60° for more than 4s	69°	15s 800ms	5s 400ms

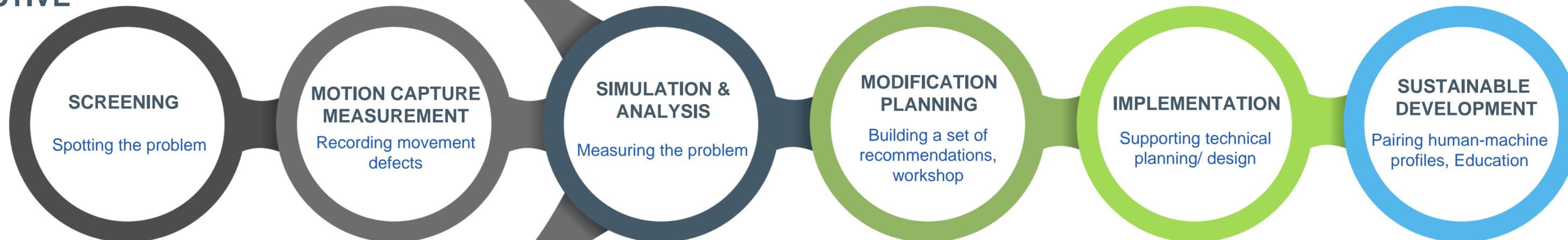
**ATTACHED SERVICES
FOR THE MANUFACTURING SECTOR**

TRANSPosed

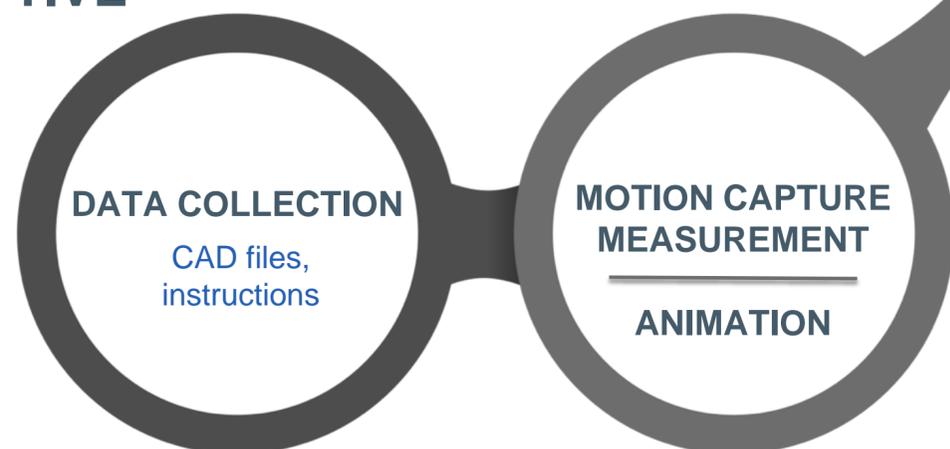


WORKFLOW

CORRECTIVE



CONCEPTIVE



*transposed = Compliance analysis of distant people and machines

*corrective = Optimizing existing workplaces

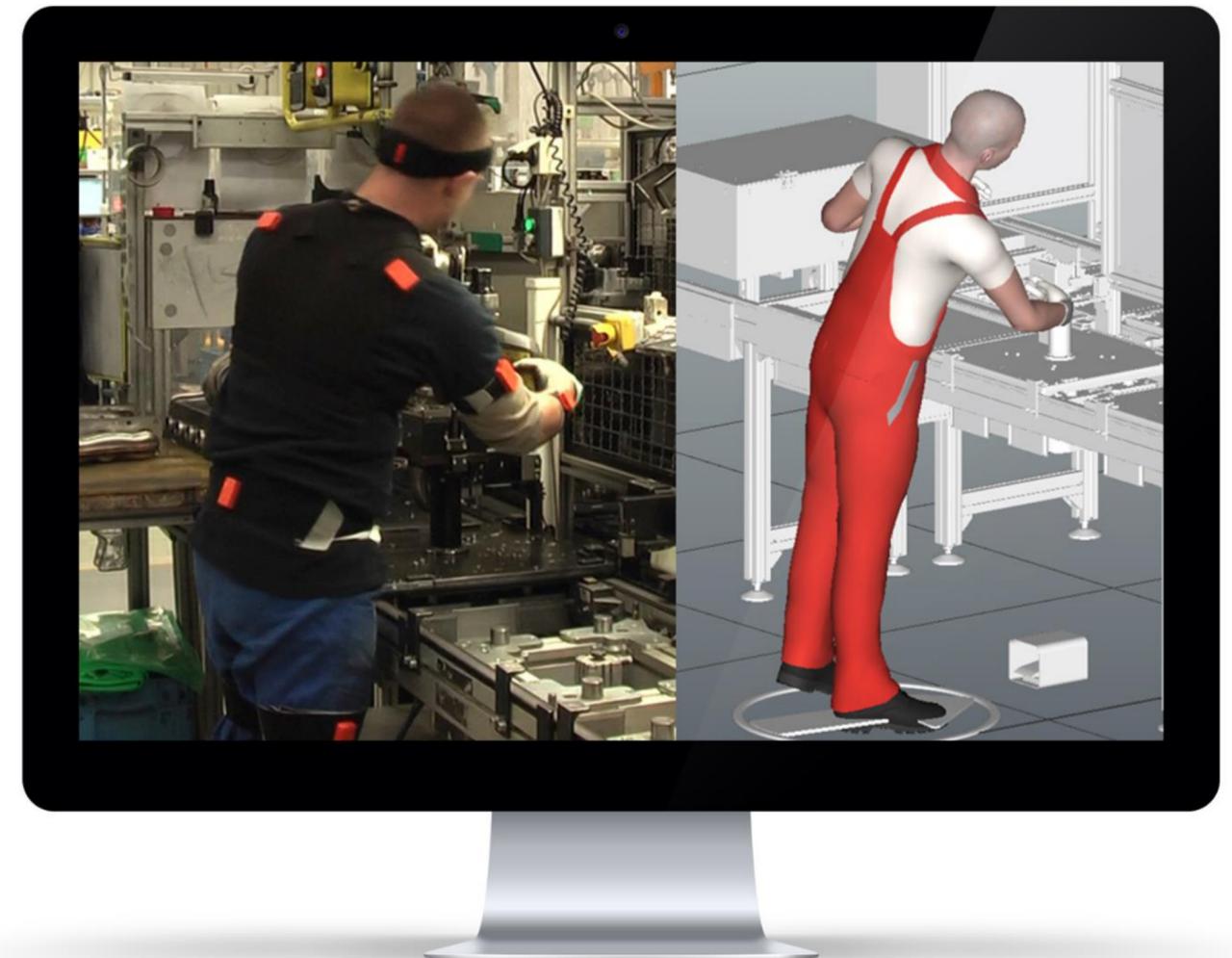
*conceptive = Ergonomic virtual verification and quality control of new workplaces in planning phase

MOTION CAPTURE MEASUREMENT

On those workstations, where immediate action was suggested during screening, we perform the sensory movement capture with the aid of the Xsens Motion Capture system.

The Xsens MVN product family is a system for full body motion measurement and recording, which uses inertial sensors, biomechanical models and sensor fusion algorithms.

The sensors do not limit the movement of the workforce, captures every detail of movement accurately, quickly, objectively and precisely.



LEICA 3D SCANNING

IN LACK OF CAD FILES NECESSARY FOR THE EXAMINATION

PROCESS:

- 3D scanning of machines and environment
- CAD file import to the ViveLab Ergo software

RESULT:

- CAD files about the machines and the environment. Our ergonomics specialists can accurately examine the placement, layout and space requirements of the machines and the workforce relative to each other.

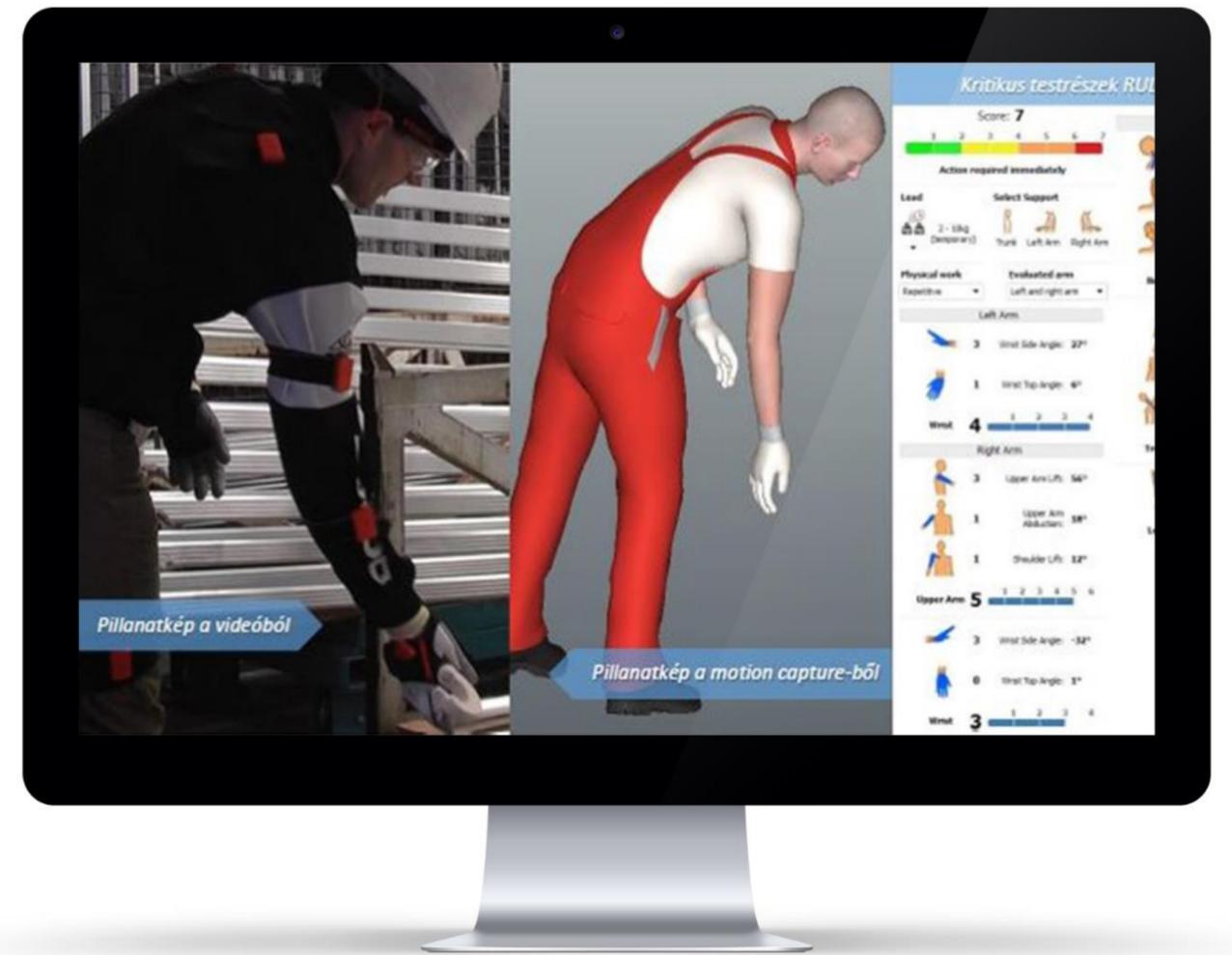


SIMULATION AND ANALYSIS

Imported motion files and CAD files in ViveLab Ergo's three-dimensional virtual environment can be viewed from any angle.

Our ergonomics specialists analyze the motions captured with analyzes built into the system, hence, they can filter improper movements and forced postures that cannot be noticed with visual inspection.

The body structure, sex, age and origin of the character can be changed, hence, the working environment can be tested for workers with all kinds of features.



EN1005-4 evaluation results

Attila

Start time: 0s
End time: 2m 10s 704ms
Supports: None

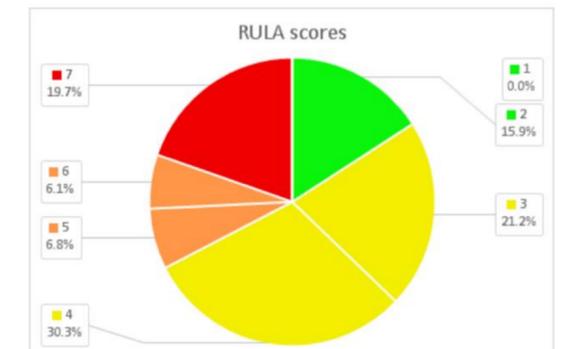
Not acceptable

Critical Postures	Maximum Frequency	Starting Time	Holding Time
1 Left upper arm adduction occurs with a frequency >=2/min	6/min	0s	1m 13s 900ms
2 Right upper arm adduction occurs with a frequency >=2/min	15/min	0s	1m 20s 700ms
3 Left knee flexion is >0° while standing (bottom not rested) occurs with a frequency >=2/min	18/min	0s	2m 8s 200ms
4 Left shoulder raising occurs with a frequency >=2/min	12/min	0s 300ms	2m 10s 404ms
5 Left wrist radial abduction >20° occurs with a frequency >=2/min	11/min	0s 300ms	2m 5s 800ms
6 Neck flexion is >40° occurs with a frequency >=2/min	9/min	0s 400ms	2m 1s 400ms
7 Trunk inclination is 20°–60° while the trunk is not supported occurs with a frequency >=2/min	7/min	0s 500ms	1m 54s 600ms
8 Asymmetric trunk posture (lateral flexion) occurs with a frequency >=2/min	16/min	0s 500ms	2m 10s 204ms
9 Asymmetric trunk posture (axial rotation) occurs with a frequency >=2/min	10/min	2s 800ms	2m 7s 904ms
10 Left elbow extension is >10° occurs with a frequency >=2/min	4/min	3s 300ms	1m 8s 700ms
11 Right knee flexion is >0° while standing (bottom not rested) occurs with a frequency >=2/min	15/min	3s 700ms	2m 5s

RULA Statistics Result

Attila

Time interval: 0s – 2m 10s 704ms
Load: 2kg or less
Physical work: Non-exacting
Evaluated arm: Left and right arm
Trunk support: No
Left arm support: No
Right arm support: No

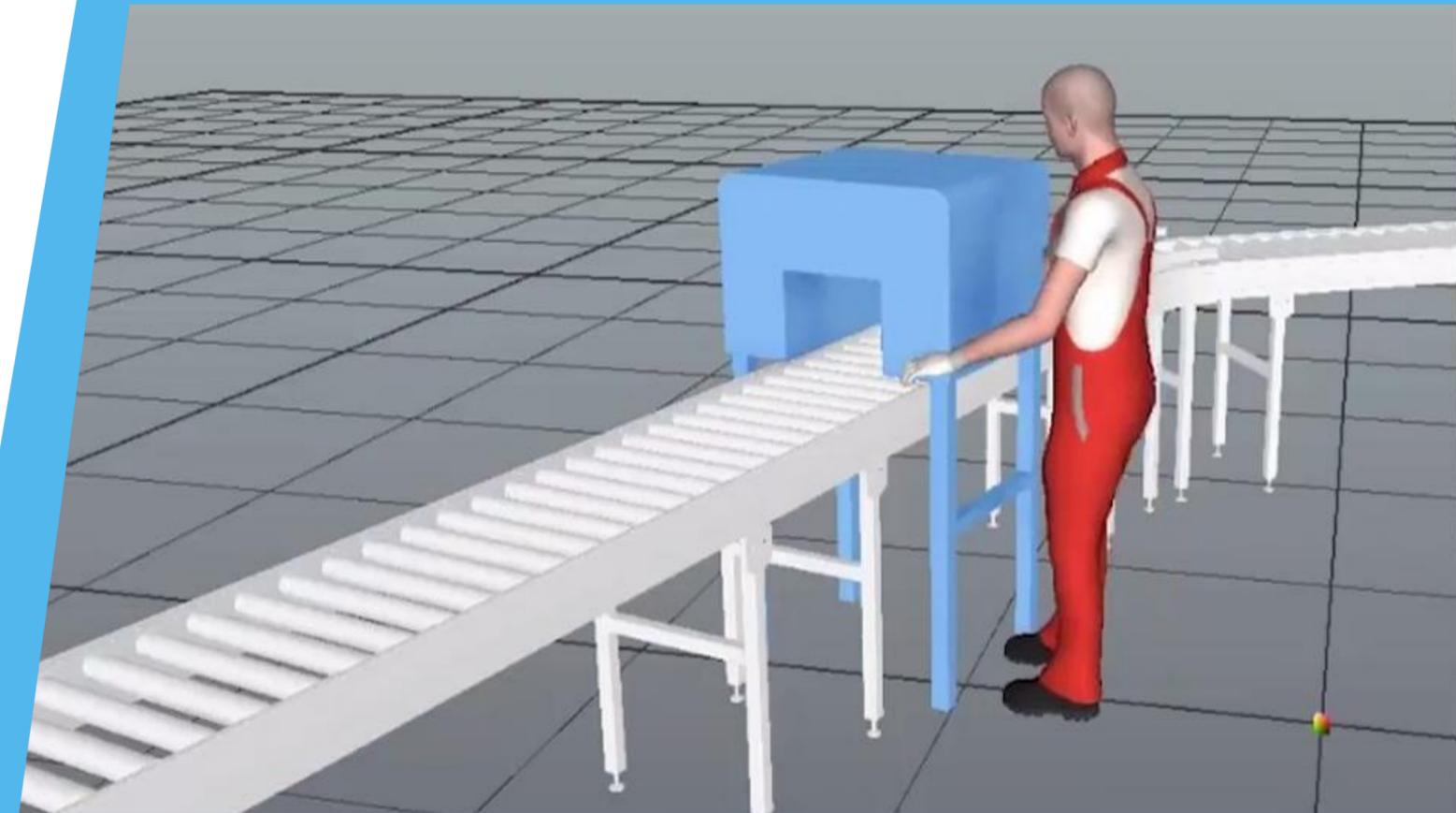


ACTION PLAN

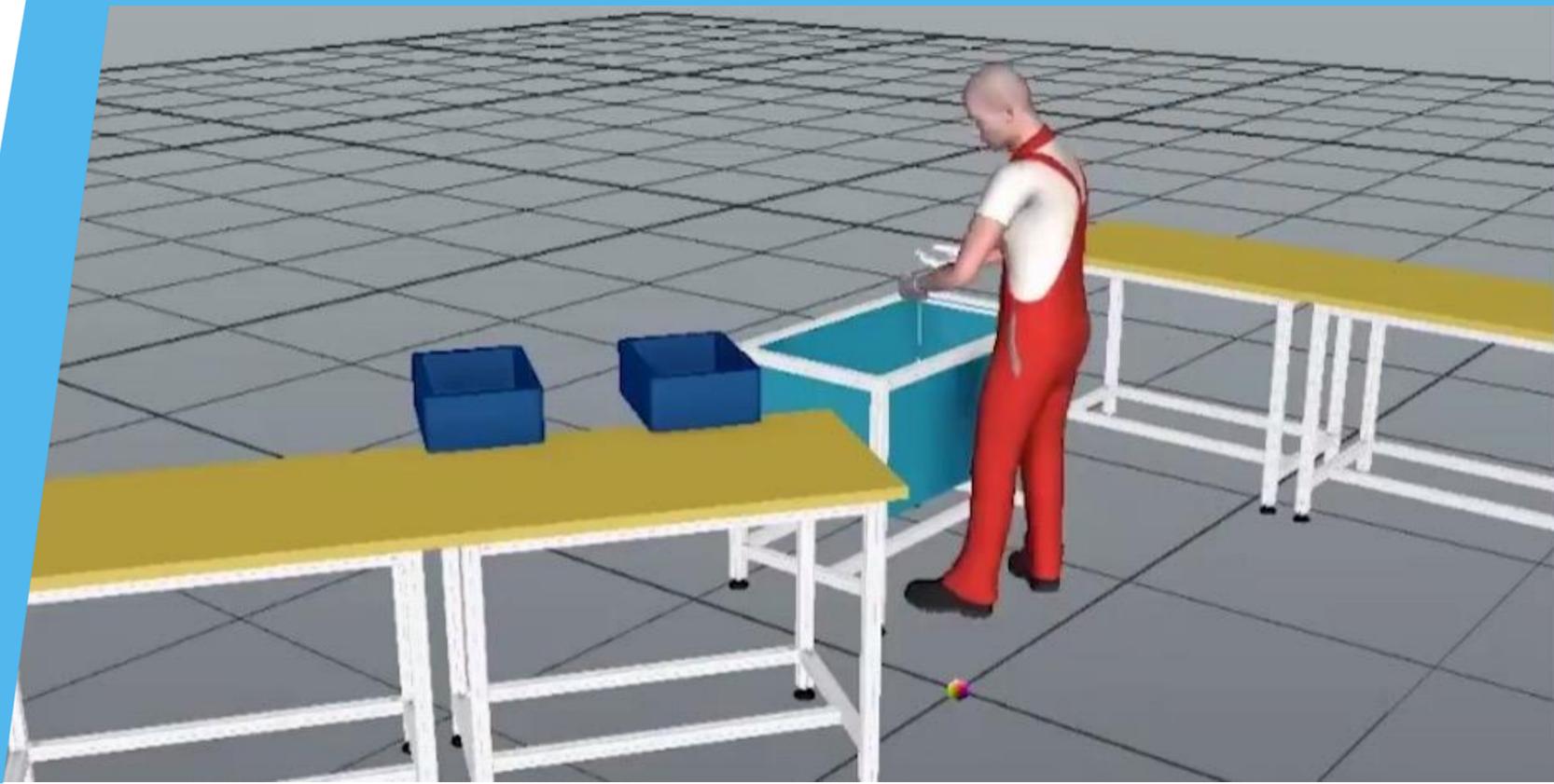
During the detailed analysis, ergonomics experts specify the possible organizational, technical and individual actions and simulate them in the ViveLab Ergo software.

Those solutions have to be selected from the action proposals, that match the goals and possibilities of the Customer. Our ergonomics specialists interpret all proposals together with the customer in a workshop, then select and schedule the actions to be implemented.

OPTIMAL WORK PROCESS AND ENVIRONMENT



ORIGINAL WORK PROCESS AND ENVIRONMENT



IMPLEMENTATION

In the phase of technical planning, our ergonomics specialists are offering counselling, virtual validation and verification tests.

During the tests it is checked without prototype production in a virtual space whether the product/component meets the requirements.

Upon request after implementation impact analysis and measurements are carried out.



PROFILE COMPARISON

Tool of sustainable development

In the profile comparison, we compile two profiles based on the workstation requirements and the employee's capabilities according to the same criteria. In the knowledge of the two profiles we assign the appropriate profile employee to the workstations.

This method provides assistance in scheduling shifts, substituting and integrating workers with changed abilities and older workers.



TRAININGS & SEMINARS



SUPPORT & MENTORING

- Collaboration with our ergonomists
- Dedicated mentor
- Support



ABOUT US

OUR COMPANY

ViveLab Ergo Ltd. is a technological startup enterprise founded in Hungary. ViveLab Ergo's mission is to provide fast and accurate three-dimensional virtual ergonomic tests, analysis and planning for wide range of companies. ViveLab Ergo developed a simulation system along this objective to create optimal working environments and workflows for health, efficiency and competitiveness. ViveLab Ergo's founders have three decades of academic level scientific work and professional history to ensure that our company becomes one of the world's leading research and development workshops in the field of virtual ergonomics researches. We believe that the key factor to the future of mankind and sustainable development lies in smooth cooperation between humans, machines and the environment.

REFERENCES

Some of our successful projects
at major manufacturing companies





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VIVELAB.CLOUD