

Instructions for Use

VAST.Rehab

Product	VAST.Rehab
Document	05904496817805_eIFU_MDR_rev_1
Release date	08.10.2026
Applies to software version	2026.1 and later

Virtual reality rehabilitation support system

Software for motor and cognitive rehabilitation

Class I medical device, Regulation (EU) 2017/745 (MDR)

Manufacturer's contact details:

BRONTES PROCESSING Sp. z o.o.
ul. Przewozowa 32
44-100 Gliwice, Poland

PHONE: +48 661 867 078, +48 501 830 979

E-MAIL: info@vast.rehab

WEB: <https://vast.rehab>



2017/745 MDR

Table of contents

1. Introduction	3
1.1 GENERAL INFORMATION	3
1.2 Premise	6
1.3 Symbols used in the software.....	7
2. Technology.....	7
2.1 BASIC DATA.....	7
2.2 PERIODIC FUNCTIONALITY CHECK	10
2.3 THE VAST.REHAB DEVICE	12
3. Preparing the device for use and basic information.....	14
3.1 STARTING THE DEVICE	14
3.2 OPERATING THE SOFTWARE.....	15
3.3 DEVICE CONFIGURATION AND CALIBRATION.....	17
3.4 SYSTEM VOLUME ADJUSTMENT	17
3.5 DISINFECTION PROCEDURE	17
3.6 SHUTTING DOWN THE DEVICE	18
3.7 Additional modules and task packages	18
4. Clinical use	18
4.1 INDICATIONS AND CONTRAINDICATIONS	18
4.2 SAFETY OF USE.....	20
4.3 SAFETY CONCEPT	20
4.4 RESIDUAL RISK	21
4.5 GENERAL SAFETY REGULATIONS FOR THE OWNER AND OPERATOR.....	21
4.6 SAFETY INSTRUCTIONS FOR MAINTENANCE, INSPECTION AND INSTALLATION	22
4.7 FINISHING WORK WITH THE DEVICE	23
5. Warranty and legal disclaimers	25
5.1 WARRANTY TERMS	25
5.2 EXAMPLES OF WARRANTY EXCLUSIONS.....	25
5.3 CONTACT DETAILS OF THE AUTHORIZED SERVICE REPRESENTATIVE	26
6. Related documents.....	26

1. Introduction

1.1 GENERAL INFORMATION

This manual contains the information necessary to understand how the VAST.Rehab software works and to start using it. For more information about the device, please contact us. The contact details are provided at the beginning of this manual.

1.1.1 Rules for using this manual

	Read the instructions for use before using the software!
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BRONTES PROCESSING Sp. z o.o. accepts no liability for personal injury or property damage if the safety regulations and the instructions for proper use of the VAST.Rehab software are not observed. For readability, this manual uses generic terms that always refer to persons of all genders.

This manual is provided in electronic form (e-IFU) as a PDF file. It is the first version of the VAST.Rehab instructions for use issued in electronic form and replaces the previous paper instructions for use “VAST.Rehab Instructions for Use Rev.3” – release date 2025.03.05. The current version of the manual and all versions issued in electronic form, together with their publication dates, are available at <https://vast.rehab/download> and from within the application. A PDF viewer is required to read it. We send the paper version free of charge on request within 7 calendar days of receiving a request at info@vast.rehab.

Detailed descriptions of the software screens and functions can be found in the documents listed in Chapter 6. In case of any discrepancy, this manual prevails.

1.1.2 Explanation of symbols and abbreviations used in this manual

Symbol / abbreviation	Meaning
	Warning: serious risk of injury or hazard if the information marked with this symbol is ignored. Pay particular attention to these notes!
	Consult the electronic instructions for use.
	Manufacturer.
	Medical device.
	Unique device identifier.
	Serial number – for software, this is the version number.
 2017/745 MDR	CE marking of conformity in accordance with Regulation (EU) 2017/745.

Symbol / abbreviation	Meaning
	Electronic equipment taken out of service must be handed over to a facility that handles the disposal of electrical equipment.
MDR	Regulation (EU) 2017/745 on medical devices.
e-IFU	Electronic instructions for use.
VR	Virtual reality (VR headset).
GDPR	Regulation (EU) 2016/679 on the protection of personal data.

1.1.3 Device components

Upon delivery, check that the licenses and access data are complete. In case of any discrepancy, please contact the manufacturer or distributor immediately.

The VAST.Rehab software consists of:

1. Patient Panel – running workouts and exercises at the Patient Station,
2. Therapist Panel – patient accounts, therapy planning, supervision, reports,
3. Administrator Panel – therapist accounts, licenses,
4. Local Server Manager – management of the Local Server (operation without internet only),
5. Administrator login credentials and a sample therapist account,
6. Sentinel USB key (Local Server mode only).

Operation requires the compatible devices described in section 2.3.1 and hardware meeting the requirements of section 2.1.1.



For safety reasons, use only original software downloaded from the manufacturer's sources and the compatible devices listed in this manual.

1.1.4 Intended purpose of the device and target group

VAST.Rehab is software that supports motor and cognitive rehabilitation. Using contactless motion tracking, it guides the patient through therapeutic tasks with real-time biofeedback and documents the course of therapy. It is a complementary tool: it does not replace the therapist or traditional rehabilitation methods and is not intended for making a diagnosis.

The patient target group includes children and adults, including older people, with loss or restriction of motor or cognitive functions caused by cerebral, neurological, spinal, muscular or bone-related disorders.

The minimum user age for Meta Quest VR headsets is 10 years.

The intended users are physiotherapists, occupational therapists, physicians and other rehabilitation specialists, as well as the system administrator at the facility. The patient performs the tasks under the therapist's supervision and does not configure the system.

1.1.5 Notes



Before using the software for the first time, you must read the entire instructions for use!

Medical staff and appropriately trained therapists responsible for the system are obliged to inform third parties of the need to observe all precautions.

The software may only be used by staff with the appropriate qualifications to perform therapeutic procedures with it. If you need training in the use of the system, please contact us. Make sure that the stations and accounts are protected against unauthorized persons.

1.1.6 Rules for safe use

Modifications to the software, its files or database made by users may reduce the safety and performance of the system. All updates and service configuration changes are performed by the manufacturer or an authorized distributor. The information in section 1.1.7 familiarizes users with potential hazards and warns against injuries resulting from violation of the safety rules.



Using the software for purposes other than those specified by the manufacturer is prohibited!



Modifying the software or the database on your own is prohibited!

1.1.7 Warnings

All safety information and warnings are marked with the symbol described in section 1.1.2. They are collected in one place below.

Warnings from the first chapter:

- Read the instructions for use before using the software!
- For safety reasons, use only original software and the compatible devices listed in this manual.
- Using the software for purposes other than those specified by the manufacturer is prohibited!
- Modifying the software or the database on your own is prohibited!

Warnings from the second chapter:

- Numerical results are indicative and are not diagnostic measurements.
- A session requires an exercise area of approx. 3×3 m that is kept free of obstacles at all times.
- VR headsets block the view of the surroundings – a patient wearing a headset must be observed by the therapist at all times.
- Stop using the system immediately if you notice any of the faults described in section 2.2.1!

Warnings from the third chapter:

- Before each workout, check that the tasks, position, range of motion and duration are appropriate for the patient's current condition.
- For patients with balance disorders, use a sitting position or guarding.

- Set the volume so as to avoid hearing damage; check it before therapy.
- After each therapy session, you must disinfect the VR headset and the parts that come into contact with the patient's body.
- Do not conduct therapy in Sandbox mode – the results will not be saved.

Warnings from the fourth chapter:

- The patient may have additional contraindications that disqualify them from therapy using the system!
- Stop the therapy immediately if the therapist cannot see or hear the patient.
- Performing therapy in a standing position increases the risk of falling and requires constant supervision by the therapist.
- Flashing lights and rapidly changing images can trigger epileptic seizures in susceptible persons.
- The Training room does not replace direct observation of the patient.
- Any serious incident must be reported to the manufacturer and to the competent national authority.
- Restoring a backup replaces the current database.

Warnings from the fifth chapter:

- The warranty is binding provided that the software is used in accordance with this manual.

1.1.8 User's scope of responsibility

The owner (facility) is responsible for ensuring that all persons operating VAST.Rehab have read and understood this manual. The manufacturer cannot guarantee that every person who has read it is authorized to use the system. The owner must ensure that personnel with medical competence and education are trained.

The therapist in charge has sole medical responsibility for the therapy: they decide on the indications, assess the benefits and risks for each patient and adapt the sessions to the patient's abilities. The owner is also responsible for the IT security of the stations and the protection of patient data.

In the event of a system malfunction, the owner must stop using the system and contact the manufacturer or distributor.

1.1.9 Errors and omissions

If you notice any errors or omissions in this manual, please contact BRONTES PROCESSING Sp. z o.o. using the contact details provided at the beginning of this manual.

1.1.10 Property of Brontes Processing

BRONTES PROCESSING Sp. z o.o., with its registered office in Gliwice at ul. Przewozowa 32, is the owner of these instructions for use and of the VAST.Rehab software. The information contained in this manual may be used only for working with VAST.Rehab. Copying or disclosing the documents (including screenshots and illustrations) to third parties without the manufacturer's written consent is prohibited.

The above information also applies to the documents related to this manual!

1.2 Premise

VAST.Rehab is a complex medical system. To ensure the safety of patients and third parties, users of the device must have appropriate qualifications and must read all the information documents listed in Chapter 6. The quality of therapy and the correctness of data depend on compliance with the rules of

proper use. Only the owner of the system may instruct other persons in its use, after first making sure that they have completed training in the operation of VAST.Rehab.

1.3 Symbols used in the software

The markings displayed in the VAST.Rehab software in accordance with Regulation (EU) 2017/745 are described below. The meaning of the symbols is described in section 1.1.2.

1.3.1 Nameplate / Label

The software does not have a physical nameplate. Its function is performed by an electronic label displayed in each application after clicking the “About” tab with the module name on the left edge of the screen. It contains the following information:

Medical device:	VAST.Rehab
Manufacturer:	BRONTES PROCESSING Sp. z o.o. ul. Przewozowa 32 44-100 Gliwice, Poland
UDI-DI:	(01)05904496817805
UDI-PI:	(8012)xxxx.x.xxxx.xxxx(11)YYMMDD
SN (software version):	xxxx.x.xxxx.xxxx
Release date:	YYYYMMDD HHMMSS
Electronic instructions for use (e-IFU):	https://vast.rehab/download
Paper instructions for use:	Available to users and purchasers free of charge on request within 7 days.
E-MAIL:	info@vast.rehab
 2017/745 MDR	

The x characters stand for digits. In the table above, they are used to show the format. The actual number is displayed on the software screen.

2. Technology

2.1 BASIC DATA

2.1.1 Overview

Item	Data
Device name	VAST.Rehab
Basic UDI-DI code	59044968178VREU
UDI-DI	(01)05904496817805

Item	Data
Software version	2026.1.xxxx.xxxxx and later
Classification	VAST.Rehab is software that is a Class I medical device in accordance with Rule 11 of Annex VIII to Regulation (EU) 2017/745 of the European Parliament and of the Council
Manufacturer's SRN (EUDAMED)	PL-MF-000055231
Country of origin	Poland
Platforms	Windows 10 and 11; Android 11 and later; iOS / iPadOS; Meta Quest 3 and 3s
Operating modes	Continuous operation, Local Server (without internet, with a Sentinel USB key) or Internet Server for devices with internet access.
Nature of measurements	Indicative – for tracking changes in the same patient under comparable conditions; not to be used for making decisions for diagnostic or therapeutic purposes.
Recorded parameters	Range of motion, movement and reaction time, repetitions, accuracy, movement path length, deviations in the X and Y axes, balance parameters, workout duration and frequency, memory, points.
Library	More than 72 therapeutic tasks in the form of gamified exercises and tests, more than 100 movement patterns (control modes)
Version support period	6 months from the release date of the next version. The user receives updates to new versions free of charge.

Hardware requirements (minimum):

Station	System	Processor	RAM	Graphics	Other
Therapist Station, Administrator Panel	Windows 10 or 11	Intel i3 8th gen. or better	16 GB	–	touch screen recommended
Patient Station – ZED 2 3D camera	Windows 10 or 11	Intel i5 8th gen. or better	16 GB	NVIDIA RTX 2060 / GTX 1660 Ti or better	TV ≥ 40" recommended

Station	System	Processor	RAM	Graphics	Other
Patient Station – Azure Kinect, Kinect v2	Windows 10 or 11	Intel i5 8th gen. or better	16 GB	NVIDIA RTX 2060 / GTX 1660 Ti or better	TV ≥ 40" recommended
Patient Station – Leap Motion / Ultraleap	Windows 10 or 11	Intel i5 8th gen. or better	16 GB	NVIDIA RTX 2060 / GTX 1660 Ti or better	touch screen recommended
Patient Station – VR headset	headset system	–	–	–	Meta Quest 3 / 3s, stable Wi-Fi
Patient Station – Android	Android 11+	Snapdragon 870 or better	8 GB	Adreno 650	built-in camera
Patient Station – iOS / iPadOS	iOS 15.0, iPadOS 15.0. or later	-	-	-	built-in camera
Local Server	Windows 10 or 11	Intel i3 8th gen. or better	16 GB	-	Sentinel USB key, separate drive for backups

The “N” editions of Windows 10/11 require installation of the Media Feature Pack.

Network and IT security:

- stable network connection at all stations; Therapist and Patient Stations (including VR headsets) on the same local network, with network discovery enabled in Windows,
- Internet Server mode: internet access, HTTPS-encrypted transmission, encrypted database,
- Local Server mode: operation without internet; internet is needed only to refresh licenses and update the software,
- individual password-protected accounts with administrator, therapist and patient roles,
- facility obligations: separate accounts and strong passwords, changing initial passwords, screen lock, up-to-date operating system, antivirus and firewall, trusted networks only, securing the Sentinel USB key, regular backups.

Network ports and protocols.

The Therapist Panel connects to the Patient Panel on the local network. The Patient Panel announces its presence via UDP multicast to address 239.157.78.213, port 51493. The Therapist Panel connects to it via TCP on port 39174. If this port is in use, the Patient Panel selects a dynamic port and includes it in the announcement. The firewalls of both stations must therefore allow UDP 51493 (multicast) and TCP 39174 traffic. Multicast traffic must also pass through the switches of this subnet.

The Local Server (Local Server mode) provides three services:

TCP 5794 (HTTPS): main service, used by the Therapist Panel;

TCP 5795 (HTTPS): Patient Panel service;

TCP 5796 (HTTP): time service.

The stations find the Local Server via WS-Discovery (UDP 3702, multicast 239.255.255.250). On startup, the service automatically adds Windows Firewall rules for these ports.

Internet Server mode requires outbound traffic:

HTTPS (TCP 443) to vr-services-2021.azurewebsites.net, vast.webpubsub.azure.com (WebSocket over TLS), vrstorage.blob.core.windows.net and vast.rehab (updates);

HTTP (TCP 80) to vr-services-2021.azurewebsites.net (time synchronization) and vrstorage.blob.core.windows.net.

2.1.2 Places of use

Use of the system is limited to clean and dry rooms in healthcare facilities. Examples of such places are:

- hospitals,
- outpatient facilities,
- sanatoriums,
- rehabilitation and physiotherapy practices.

For full body tracking, a room of approx. 3 × 3 m is recommended. The exercise area must be free of obstacles, with a non-slip floor and even lighting, without direct sunlight or mirrors in the camera's field of view. Each session takes place under the supervision of qualified medical staff.



Use compatible devices in accordance with the environmental limitations specified by their manufacturers!

2.1.3 Disposal

The software does not require physical disposal. When taking it out of use:

1. Archive patient documentation in accordance with medical records regulations and the GDPR.
2. Uninstall the applications from all stations; in Local Server mode, remove the services with the button in Local Server Manager.
3. Securely delete the database and backups, or destroy the storage media.
4. In Internet Server mode, notify the manufacturer of the end of use and request deletion of the accounts.
5. Return the Sentinel USB key to the distributor or destroy it.



Computers, cameras, VR headsets and tablets are electrical devices and must not be disposed of as ordinary waste!

2.2 PERIODIC FUNCTIONALITY CHECK

2.2.1 Test checklist

Regular checks are intended to detect system malfunctions early. The recommended check interval is one month; a check should also follow every update of the software or operating system and every hardware change. The person responsible for the check should be trained in the use of the system.

Check	Detected fault	Required action
Software version	The version on the “About” screen differs from the version of the manual or between stations	Update all VAST.Rehab stations and applications; if this is not possible – contact the manufacturer or distributor
Login	Unable to log in to the Administrator, Therapist or Patient Panel	Further use is prohibited; contact the manufacturer
Motion tracking	The silhouette or hands of the person playing are not detected in the entire exercise area, or the image freezes	Improve the lighting and positioning, calibrate the sensor; if the fault persists – further use is prohibited
Training room	Patient Station shown as offline	Check that the station has been started correctly, check the network and network discovery; restart the applications
Local Server	No administrator login or stopped services in Local Server Manager	Connect the Sentinel USB key, check Service Updater; contact the manufacturer
Backups	No current backup or backup creation error	Enable automatic backups, make a manual backup
Error messages	Red triangle in the application	Send the log to technical support (section 4.7.3)
Compatible devices	Visible damage to the camera or other devices – controllers, headsets, cables; dirty lenses or facial interface of the VR headset	Further use is prohibited; clean or replace in accordance with the device manufacturer's instructions



Stop using the system immediately if you notice any of the faults described!

2.2.2 Repairs

Any modification of the software, its files or database by unauthorized persons is prohibited. Software faults are corrected by the manufacturer through updates.



In case of software malfunction, always contact the manufacturer or distributor!

2.2.3 Periodic inspections

The software does not require annual electrical safety tests. However, compatible devices and computers are subject to inspections and safety tests in accordance with their manufacturers' recommendations and the regulations applicable at the facility.

Periodically, at least once every 6 months: check whether a new version of the software and the manual is available, review user accounts (suspend inactive ones) and check the backups in Local Server mode.

2.3 THE VAST.REHAB DEVICE

VAST.Rehab is software for motor and cognitive rehabilitation with real-time biofeedback. The system tracks the movement of the patient's whole body, hands and fingers without contact, in a standing or sitting position, without sensors on the body. The patient uses movement to control game-based tasks, while the therapist sets the parameters, supervises the session live and analyzes the reports. All sessions are recorded and can be used to visualize the progress made for the patient.

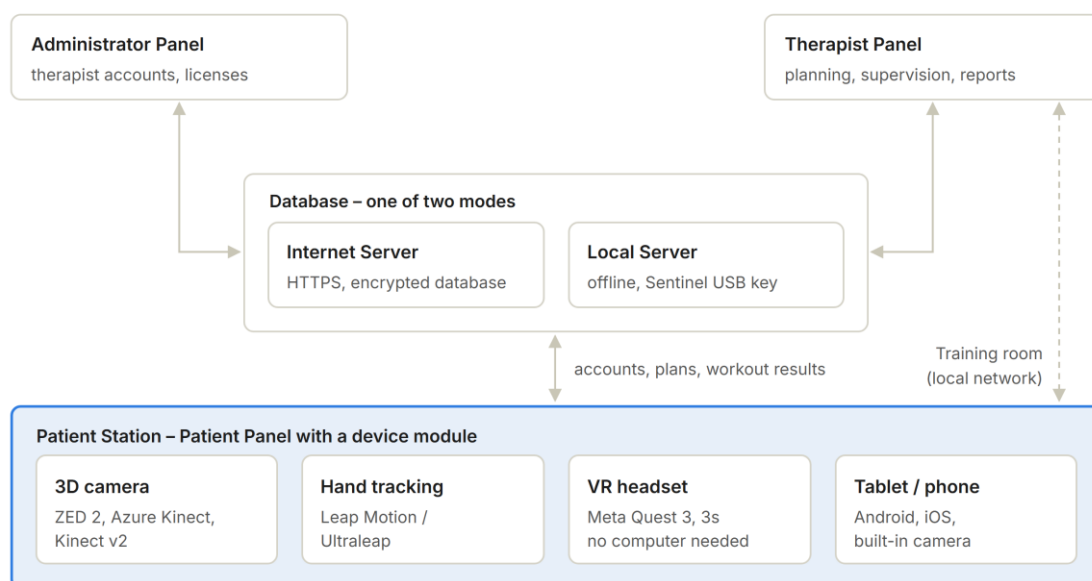
Medical use and target group

The system supports therapy in the following areas: musculoskeletal system (range of motion, strength, endurance, cardiovascular training), nervous system (movement quality, proprioception, bilateral movements), balance (trunk and postural control, reactions to stimuli) and cognitive functions (divided attention, memory, problem solving). Evaluation tasks include, e.g., "Reach test", "Angles evaluation", "Stability test", "Romberg test" (an adaptation of the Romberg test), "Unterberger's test" (an adaptation of the Unterberger test), "Dynamic test" and "GoNoGo test", and give the patient feedback against which they can periodically compare themselves. The target group is described in section 1.1.4.

Expected clinical benefits: greater patient motivation, greater engagement and, as a result, a higher number of repetitions, real-time feedback on the result and quality of movement, therapy tailored to the patient's abilities, and objective documentation of the exercises.

System structure

All applications use a shared database



VAST.Rehab system structure

The basic unit of work is the Patient Station: a motion tracking device, hardware meeting the minimum requirements and the software module assigned to it. Live preview and changes in the Therapist Panel (Training room) require a shared local network.

2.3.1 Compatible devices

Module	Device	Therapy area	Driver
3D full body tracking	Stereolabs ZED 2	Whole body, balance, standing and sitting position	Stereolabs ZED package from the manufacturer's website
3D full body tracking	Microsoft Azure Kinect	as above	Azure Kinect package from the manufacturer's website
3D full body tracking	Microsoft Kinect v2	as above	no additional package required
Hands and fingers tracking	Leap Motion / Ultraleap	Upper limbs, hands, fingers	no additional package required
VR headset	Meta Quest 3, Meta Quest 3s	Whole body and hands in a virtual environment	app from the Meta Horizon Store
Mobile devices	Android or iOS tablets and phones	2D full body tracking with the built-in camera	app from Google Play / App Store



Use only devices from the above list that are assigned to the Patient Station in the license. Operate compatible devices in accordance with their manufacturers' instructions, including the Meta Quest headset safety instructions!

2.3.2 Signals and messages

Signal / message	Where	Meaning
Red triangle	All applications	An error has occurred; click to view the details and send the log (section 4.7.3)
Exclamation mark next to a patient	Therapist Panel	The patient requires attention, e.g. a new message or missed workouts
Green / gray rectangle	Therapist Panel – schedule	Workout completed / scheduled
Green category tile	Therapist Panel – reports	The category contains results for analysis
Average accuracy approx. 70% / below 25%	Training room	Parameters well chosen / task too difficult for the patient

Signal / message	Where	Meaning
Station “Waiting for patient” / “Offline”	Training room	Nobody is logged in / no connection to the station
Test mode marking in the window background	Therapist Panel	Sandbox mode – data is not saved
USB key not detected	Local Server Manager	The Sentinel USB key is not connected; the Local Server is not running
“Searching for device”	Patient Panel	The sensor is not detected
Time circles and points counter	Patient Panel – workout screen	Outer circle: time until the end of the workout; inner circle: time until the end of the task; points scored by the patient

The LED signals of the Meta Quest headset (power, charging and battery status) are described in the headset manufacturer's documentation listed in Chapter 6.

3. Preparing the device for use and basic information

Applications, user guides and module brochures are available at <https://vast.rehab/download>.

Installation, device configuration and training are carried out by the VAST.Rehab distributor or the manufacturer's team, on site or remotely.

3.1 STARTING THE DEVICE

Before installation:

1. Check that the hardware meets the requirements of section 2.1.1.
2. Select the facility's operating mode: “Internet Server” (default) or “Local Server”.
3. Obtain the administrator login credentials and a sample therapist account from the distributor.

Installing the applications – only from the manufacturer's sources:

Application	Platform	Source
Administrator Panel, Therapist Panel, Patient Panel, Local Server Manager	Windows	https://vast.rehab/download (MSIX)
Patient Panel	Android	Google Play
Patient Panel	iOS / iPadOS	App Store
Patient Panel	Meta Quest 3 / 3s	Meta Horizon Store

Install camera drivers only for the sensor in use (section 2.3.1).

Installing the Local Server (Local Server mode only):

1. Connect the Sentinel USB key to the server computer.
2. Install and run Local Server Manager.

3. Once the key has been detected, install the VAST.Rehab Service Updater service (requires Windows administrator rights).
4. Specify a database location on a partition other than the operating system partition.
5. Enable automatic backups to a drive other than the database drive.

Activating the Patient Station:

1. In the Patient Panel settings, open the license change and enter the facility administrator's login credentials.
2. Select the connection type: "Internet Server" or "Local Server".
3. Select the Patient Station from the license list and give it a name that will be visible in the Therapist Panel.

Daily startup:

1. Check that the Therapist Station and the Patient Station are connected to the power supply and that the sensor is connected to the computer.
2. Turn on the computers; in Local Server mode, start with the server computer with the Sentinel USB key.
3. Turn on the VR headset by holding the power button for approx. 2 seconds, and launch the VAST.Rehab application on it.
4. Start the Therapist Panel and the Patient Panel and log in.
5. In the Training room, check that the Patient Station is available.



To ensure communication, make sure that the Therapist Station and the Patient Station (including VR headsets) are connected to the same local network!

Readiness verification – before first use with a patient and after each hardware change or update, perform the check described in section 2.2.1 and a test workout in Sandbox mode. If any item is not met, do not start therapy.

3.2 OPERATING THE SOFTWARE

The software consists of four interoperating applications. Detailed descriptions of the screens are contained in the documents listed in Chapter 6.

1. Administrator Panel (document 6.2)

The Administrator Panel is used to manage licenses and therapist accounts. Refer to the Admin's guide.

2. Therapist Panel (document 6.4)

- Patients: a separate account for each patient, consent to the Privacy Policy and Terms of Use; notes; suspending and restoring accounts; workout history and statistics/reports; an exclamation mark indicates a patient requiring attention.
- Workout templates: from the generator (device, standing or sitting position, physical and cognitive difficulty, workout and task duration, selection of tasks/games and control mode weights) or from scratch. In the segment editor, you can move, clone and replace tasks, change the control mode and difficulty, and enable the full-screen instruction.
- Training plans: number of weeks and working days, templates for selected days, assignment to a patient with a start date.

- Workouts: from the generator, a copy of the last workout, scheduling in the calendar, or starting a scheduled workout at the selected Patient Station.
- Training room: real-time preview of results from all stations, changing the level, parameters and control mode of the current task, accepting or resetting the task/game result, moving to another task, extending the workout, shutting down all stations (“Shutdown all instances”).
- Reports: for a single session (with printout), long-term (e.g. maximum angle over consecutive weeks, side-to-side comparison), simplified for discussion with the patient, data export to an XML file.
- Research: patient groups (“Research groups”), a shared template, number of runs and interval between them, relative and raw reports (“Relative mode”, “Raw data”); editing is locked during a research workout.
- Sandbox mode: learning and demonstration with a fictitious patient, without saving data.
- Settings: interface scale, touch screen mode, metric or imperial units.
- Refer to the Therapist's guide.

3. Patient Panel (document 6.3)

- Patient login with the credentials assigned by the therapist; timeline of scheduled workouts; starting today's workout.
- “Quick Start” workout generated by the therapist at the station.
- Workout in “Anonymous Mode” or for two people (cooperation or competition) – without saving statistics.
- Simplified report with selection of the period and the progress threshold.
- Settings: language, units, monitor and resolution, station devices, license, camera for control codes; password-protected service options.
- Workout screen: image of the expected movement pattern, task instruction, time circles (section 2.3.2), number of points. Full-screen instruction: 20 s, closed manually, or disabled.
- Refer to the Patient's guide.

4. Local Server Manager (document 6.5)

- Operation check: administrator login visible, all services running.
- Automatic and manual backups, restoring the database from a backup, refreshing licenses, removing services.
- Refer to the Local Server User's Guide.



Before each workout, make sure that the selected tasks, position, range of motion and duration are appropriate for the patient's current condition!



Interpret the results as indicative. Do not compare results collected with different devices or with different parameters!

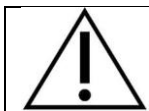


Restoring a backup replaces the current database – data saved after the backup was created will be lost!

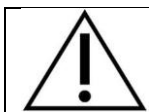
3.3 DEVICE CONFIGURATION AND CALIBRATION

1. In the Patient Panel settings, specify the devices connected to the station, the startup monitor and the resolution.
2. Position the sensor according to the module brochure: stably, at the height and distance recommended by the manufacturer, so that the entire exercise area is within the field of view.
3. Calibrate the device from the Patient Panel; position the camera so that the exercising person fits in the frame, including the feet and with the arms raised overhead, unless medically contraindicated.
4. In the VR headset, configure the play area boundary according to the headset manufacturer's instructions.
5. Check that the silhouette or hands of the test person are tracked in the entire exercise area.

Repeat the calibration after each repositioning of the sensor or change to the room layout.



The exercise area (approx. 3 × 3 m) must be free of furniture, cables and other objects that the patient could trip over or bump into!



No other persons (except a therapist assisting or guarding the exercising person) and no mirrors may be in the sensor's field of view during the session!

3.4 SYSTEM VOLUME ADJUSTMENT

The tasks use audio feedback. The volume is adjusted in the operating system settings of the station, on the TV or with the VR headset buttons.



Make sure that the volume level is appropriate to avoid hearing damage. Check the volume before performing therapy!

3.5 DISINFECTION PROCEDURE

The software does not require sterilization or disinfection. Camera tracking is contactless. Parts that come into contact with the body of the patient or therapist require disinfection:

- the facial interface, straps and housing of the VR headset, and the controllers,
- the touch screens of the Therapist Station and tablets,
- handles, handrails and other accessories used during exercises.

Disinfect using a disposable cloth moistened with an agent approved by the manufacturer of the device concerned. Do not use abrasive cleaners or corrosive solvents. Do not clean the headset lenses with liquids – use a dry microfiber cloth.



After each therapy session, you must disinfect the parts that come into contact with the patient's body!

3.6 SHUTTING DOWN THE DEVICE

1. End the workout and log the patient out.
2. Close the VAST.Rehab application in the VR headset and turn off the headset by holding the power button for approx. 5 seconds.
3. Close the Patient Panel and the Therapist Panel using the dedicated icon; you can also shut down all Patient Stations from the Training room.
4. Shut down the Windows operating system; do not turn off the computer with the power switch while the application is running.
5. In Local Server mode, turn off the server computer last, after all stations have been closed.



Do not remove the Sentinel USB key while the Local Server is running!

3.7 Additional modules and task packages

Each compatible device has an assigned package of therapeutic tasks, and some devices also have a package of evaluation tasks. The tasks are grouped into categories: Movement time, Speed, Movement precision, Functional movements, Divided attention, Memory, Problem solving, Phobias and fears, Daily activities and Specialized. A complete list of tasks with their goals, patient instructions and recorded results is contained in the module brochures (Chapter 6).

Additional modules, Patient Stations and task packages can be ordered from the exclusive VAST.Rehab distributor in the given country. Once the order has been fulfilled, the licenses are refreshed in the Administrator Panel or in Local Server Manager.

4. Clinical use

4.1 INDICATIONS AND CONTRAINDICATIONS



The patient may have additional contraindications that disqualify them from therapy using the system!

The indication is decided by the therapist in charge, taking into account the contraindications and the patient's individual condition.

Indications:

- cerebrovascular accidents (stroke),
- multiple sclerosis,
- cerebral palsy,
- Parkinson's disease and extrapyramidal syndromes,
- condition after brain tumor surgery,
- spinal cord injuries,
- traumatic brain injury,
- muscular atrophy,

- muscle weakness due to lack of mobility (deconditioning),
- hip, knee, elbow and shoulder joint endoprotheses,
- condition after stable fractures of vertebrae or extremities,
- limb amputations, with or without prosthesis,
- balance and equilibrium disturbances.

Absolute contraindications:

- acute pain despite conventional analgesic therapy,
- uncontrolled epileptic seizures within the past 2 years, or photosensitivity (photosensitive epilepsy),
- retinal disease which may be exacerbated by watching video games,
- bone instability (non-consolidated fractures of vertebrae or extremities),
- osteomyelitis or other inflammatory or infectious diseases,
- bone cancer, including spinal tumors or metastases to vertebrae or joints,
- pronounced, fixed contractures affecting the relevant extremity,
- open skin lesions in the area of the relevant extremity,
- non-stable vital functions: pulmonary or cardio-circulatory contraindications,
- spondylolisthesis of second degree or higher, or with neurological signs.

Relative contraindications:

Each patient must be individually assessed by a physician or physiotherapist as to whether therapy with VAST.Rehab is appropriate in the case of:

- severe osteoporosis,
- contractures or skin lesions affecting the relevant extremity,
- joint subluxation or severe pain in the target joint,
- severe spasticity,
- severe spontaneous movements, e.g. ataxia, dyskinesia, myoclonic jerks,
- severe postural instability,
- cardiac arrhythmia, hypotension or severe hypertension,
- confusion or lack of cooperation,
- severe cognitive deficits,
- need for isolation due to infection,
- severe visual problems that prevent recognition of elements on the screen or in the headset.

The above lists are not exhaustive. In patients with chronic diseases or comorbidities, or after prolonged immobilization, start with short sessions.

Side effects:

The tasks are designed to minimize side effects; however, side effects may occur even in the absence of contraindications. In such a case, stop the therapy immediately and assess the patient's condition. The most common include:

- fatigue, transient muscle or joint pain,
- symptoms of motion (simulator) sickness in the VR headset: nausea, dizziness,
- headaches, eye strain,
- anxiety in tasks involving heights,
- epileptic seizures in photosensitive persons.

4.2 SAFETY OF USE

Each startup of the system must be carried out by persons who have read and understood this manual. Each session takes place under the supervision of qualified medical staff. Before the first session, the therapist assesses the patient's condition, indications and contraindications.



Always observe occupational health and safety rules when using the system!

Compatible devices

VR headsets, computers and other equipment contain magnets and components that emit radio waves, which may affect the operation of nearby electronic devices, including implanted medical devices. The attending physician decides whether the system can be used safely in a given patient. Observe the safety instructions of the manufacturers of compatible devices.



If you notice any interference with the operation of the system, stop the therapy immediately and contact the manufacturer or distributor!

External factors: strong sources of infrared light or sunlight, reflective surfaces in the camera's field of view, weak or unstable Wi-Fi and Windows updates may interfere with the operation of the system. After an operating system update, perform the check described in section 2.2.1.

4.3 SAFETY CONCEPT

VAST.Rehab is an active therapeutic aid. Patient safety is based on:

- constant supervision by the therapist – the system does not make diagnoses or therapeutic decisions,
- adjusting the difficulty, range of motion, position and duration of the tasks to the patient's abilities, and changing parameters during the session from the Training room,
- the movement pattern image and the full-screen instruction before the task,
- acceptance or reset of task/game results by the therapist.

Consistent monitoring of and communication with the patient during therapy are necessary. The system does not monitor vital signs (heart rate, blood pressure) and does not warn of abnormal values.



Stop the therapy immediately if the therapist cannot see or hear the patient.



The Training room does not replace direct observation of the patient.



Performing therapy in a standing position, balance tasks and tasks involving whole-body movements increase the risk of falling and require constant supervision by the therapist. For patients with balance disorders, use guarding or a sitting position.



VR headsets block the view of the surroundings – a patient wearing a headset must be observed by the therapist at all times.



The “Canyon” task depicts being at height and may cause severe anxiety, dizziness or loss of balance. Use it only in a secured position and with patients qualified for such therapy.



Patients who are unable to keep their trunk upright on their own require appropriate seating supports.

4.4 RESIDUAL RISK

Unforeseen residual risk remains despite the application of all risk control measures. The risk analysis performed indicates that the probability of injury is low and that the benefits outweigh the potential risk, provided that the rules in this manual are followed.

Residual risk	Possible consequence	How to reduce it
Fall or loss of balance	Contusion, fracture	Guarding, sitting position, clear exercise area
Collision with the surroundings, especially when wearing a VR headset	Contusion, cut	Play area boundary, sitting position, constant supervision
Overloading of the musculoskeletal or circulatory system	Pain, overloading of a joint, ligaments or tendons	Short sessions at the beginning, selection of difficulty
Simulator sickness (VR)	Nausea, dizziness and headache	Short sessions, breaks
Light stimuli	Epileptic seizure	Observing the contraindications
Misinterpretation of results	Inappropriate change to the therapy plan	Results treated as indicative, clinical assessment
Unauthorized access or data loss	Breach of confidentiality, loss of documentation	IT security measures, backups



Any injury related to the use of the system must be reported to the manufacturer without delay!

4.5 GENERAL SAFETY REGULATIONS FOR THE OWNER AND OPERATOR



The instructions for use contain information that must be observed during installation, use and updating. The instructions must be read and understood by the system owner and by the personnel responsible for its proper operation!

Compliance with the following rules is absolutely essential:

- the system may only be used with the compatible devices listed in section 2.3.1,
- all stations should run the same, current software version,
- the check described in section 2.2.1 must be performed every month and after each update,
- patient data is processed in accordance with the GDPR; the data controller for accounts on the Internet Server is BRONTES PROCESSING Sp. z o.o.; full information notice: <https://vast.rehab/privacy-policy>.

Information to be given to the patient before the first session:

- VAST.Rehab supports therapy but does not replace it; the course of therapy is decided by the therapist,
- stop exercising immediately and inform the therapist in case of pain, shortness of breath, chest tightness, dizziness, nausea, visual disturbances, severe fatigue or anxiety,
- do not exercise longer or more intensively than recommended by the therapist,
- inform the therapist about epilepsy, eye and heart diseases, implanted devices, new injuries and changes in health,
- game results and points show individual progress but are not a medical assessment.

Incident reporting

	Any serious incident that has occurred in relation to the device must be reported to the manufacturer and to the competent authority of the Member State in which the user or patient is established.
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A serious incident is an incident that directly or indirectly led, might have led or might lead to death, a serious deterioration in health or a serious public health threat.

Recipient	Contact details
Manufacturer	BRONTES PROCESSING Sp. z o.o., ul. Przewozowa 32, 44-100 Gliwice; info@vast.rehab; phone +48 661 867 078
Competent authority in Poland	President of the Office for Registration of Medicinal Products, Medical Devices and Biocidal Products (URPL), Al. Jerozolimskie 181C, 02-222 Warszawa, https://www.urpl.gov.pl

In the report, provide the name and version of the software, the Basic UDI-DI, the date and description of the event, the consequences for the patient or user, and the hardware used. Keep the log files from the time of the event.

4.6 SAFETY INSTRUCTIONS FOR MAINTENANCE, INSPECTION AND INSTALLATION

The owner must be aware that installation, updating and configuration of the system may only be carried out by trained and authorized persons, with Windows administrator rights where required.

- Before updating the software or the operating system, back up the database (Local Server mode).
- Do not update the software during a session with a patient.

- Route sensor and power cables outside the exercise area.
- Mount the sensors securely so that they cannot fall on the patient.



Ensure unobstructed access to the station and a clear passage around the exercise area!

4.6.1 Unauthorized manufacture and design of spare parts

Modifying the software, its files, database or components on your own, and using unauthorized versions, plug-ins or drivers, is not permitted. The safety of the system can only be guaranteed when using software downloaded from the manufacturer's sources and the devices listed in section 2.3.1. The use of other components releases the manufacturer from liability for defects arising in a system modified in this way.

4.7 FINISHING WORK WITH THE DEVICE

After the session, log the patient out and shut down the system as described in section 3.6. Then disinfect the parts that came into contact with the patient's body (section 3.5), in particular the facial interface of the VR headset. Put the headset and controllers away in the place intended for storage and charging.

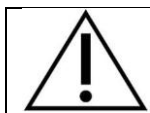
4.7.1 Maintenance and repair

Software updates:

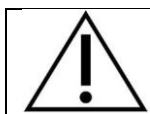
- new versions cover all applications and are released no more often than once every 6 months,
- the distributor is informed of the need to install a new version within 14 days of its publication,
- Windows applications automatically check for updates when connected to the internet and notify you of a new version; mobile and VR applications are updated through the store of the respective platform,
- if the computers are not connected to the internet, the availability of new software versions can be checked on the manufacturer's website: <https://vast.rehab/download>
- after each update, check the version number, perform the check described in section 2.2.1 and check whether a new version of the manual applies.

Backups (Local Server mode): enable automatic backups on a separate drive and regularly check that they can be restored.

VR headset and controller batteries: follow the headset manufacturer's instructions.



Do not attempt to charge or use the VR headset if it does not turn on after charging, heats up abnormally, its housing is deformed, or it leaks fluid or emits smoke!



Do not operate touch screens with sharp objects or wet hands!

Software faults are corrected only by the manufacturer. Compatible devices are repaired by their manufacturer or an authorized service center.

4.7.2 Transport

Upon delivery, check that the licenses, access data, Sentinel USB key and compatible devices are complete. Report any missing items to the supplier.

When moving the station to another location:

1. Shut down the system as described in section 3.6.
2. Transport sensors, headsets and computers in accordance with their manufacturers' instructions, in packaging that protects against shocks.
3. After setting up in the new location, reconfigure and recalibrate the sensor (section 3.3) and the play area boundary in the headset.
4. Perform the check described in section 2.2.1.

Move the Local Server to another computer by means of a backup and its restoration, in consultation with the distributor or manufacturer.

4.7.3 Troubleshooting

Report any irregularities in system operation to the distributor or manufacturer without delay. If the problem caused or could have caused harm to health, report it as described in section 4.5.

Symptom	Probable cause	Action
Red triangle in the application	Error, entry in the error log, e.g. loss of connection	Click the triangle, describe the situation, send the log with the "Send feedback" button, then click "Clean"
Patient Station offline	No connection, local network router turned off, device connected to a different local network, network discovery disabled	Check the network and network discovery in Windows
Local Server Manager without running services	No Sentinel USB key	Connect the key
Kinect: "Searching for device" after a Windows 11 update	Known issue after updating to Windows 11	Wait; update the VAST.Rehab software; if the issue persists – contact support
Application does not work after the Windows 24H2 update	Required libraries removed	Follow the help center article or contact support
Patient Panel does not work on Windows "N"	Media Feature Pack missing	Install the Media Feature Pack
Inaccurate tracking	Lighting, distance, other persons in the field of view, no calibration	Improve the conditions, calibrate; if this does not help – stop the session
Patient Panel or Local Server failure	Application error	Use "Send feedback" in the settings ("Contact"), or save the log file and send it manually



In the event of a malfunction, stop the workout, ensure the patient's safety and treat the results of the disrupted session as unreliable!

5. Warranty and legal disclaimers

BRONTES PROCESSING Sp. z o.o. assumes liability for defects in the VAST.Rehab software for a period of 24 months from the date of license activation. Ongoing support and software updates are included in the license price. The warranty for compatible devices (cameras, VR headsets, computers, tablets) is provided by their manufacturers or sellers.



The warranty is binding provided that the software is used in accordance with the rules described and the intended purpose specified in these instructions for use.

All warranty claims must be submitted in writing within 30 days of discovering the defect and before the warranty period expires. The claim should include:

- the device name and software version,
- the Patient Station or license identifier,
- the payer's tax identification number (VAT ID) (if any),
- an exact description of the fault and the log file,
- a contact person and phone number.

BRONTES PROCESSING Sp. z o.o. shall not be liable for indirect, incidental or consequential damages, including loss of profits or data, or for damage to the user's hardware, network and software not originating from BRONTES PROCESSING Sp. z o.o.

5.1 WARRANTY TERMS

- The manufacturer is obliged to remedy software defects free of charge, in particular by providing a corrected version.
- The user is obliged to install the updates provided by the manufacturer and to provide hardware that meets the requirements of section 2.1.1.
- Complaints must be submitted using the contact details in section 5.3. The complainant should precisely describe the defect and the date and circumstances of its occurrence, and cooperate with the persons responsible for the complaint process, including enabling remote service access in test mode.
- The defect should be remedied within 21 days of acceptance of the complaint; in exceptional circumstances, the deadline may be agreed with the complainant.
- The guarantor is BRONTES PROCESSING Sp. z o.o., with its registered office at ul. Przewozowa 32 in Gliwice, Silesian Voivodeship, Poland.

5.2 EXAMPLES OF WARRANTY EXCLUSIONS

- Use of the software contrary to its intended purpose or to the instructions.
- Use of hardware that does not meet the minimum requirements, or of devices not on the list in section 2.3.1.
- Modifications of the software, its files or database made on your own.
- Failure to install updates provided by the manufacturer.
- Data loss resulting from a lack of backups or from failure of the user's hardware and operating system.

- Problems resulting from network configuration, firewall, antivirus software or operating system updates on the user's side.
- Damage caused by malware or by unauthorized access resulting from failure to observe the security rules in section 2.1.1.

5.3 CONTACT DETAILS OF THE AUTHORIZED SERVICE REPRESENTATIVE

Please direct all matters related to the warranty and technical support to:

Manufacturer / service:

BRONTES PROCESSING Sp. z o.o.

ul. Przewozowa 32

44-100 Gliwice, Poland

Phone: +48 661 867 078, +48 501 830 979

E-mail: info@vast.rehab

Help center: <https://help.vast.rehab>

6. Related documents

1. EU declaration of conformity – VAST.Rehab
2. VAST.Rehab Admin's guide (version 2026.1 and later)
3. VAST.Rehab Patient's guide (version 2026.1 and later)
4. VAST.Rehab Therapist's guide (version 2026.1 and later)
5. VAST.Rehab Local Server User's Guide (version 2026.1 and later)
6. VAST.Rehab module brochure – 3D full body tracking (version 2026.1 and later)
7. VAST.Rehab module brochure – Hands and fingers tracking (version 2026.1 and later)
8. VAST.Rehab module brochure – VR full body and hands tracking (version 2026.1 and later)
9. Meta Quest 3 / 3s headset safety and user instructions (headset manufacturer)
10. Manufacturer instructions for the Stereolabs ZED 2, Microsoft Azure Kinect, Microsoft Kinect v2 and Leap Motion / Ultraleap cameras
11. VAST.Rehab Privacy Policy and Terms of Use:
<https://vast.rehab/privacy-policy>
<https://vast.rehab/terms-of-use>



Documents 2–8 are available at <https://vast.rehab/download>.