ART – ALWAYS THE RIGHT SOLUTION.

ART ▶

Professional tracking technologies

| DTRACK | CAPTA | VERPOSE® |

ART – ALWAYS THE RIGHT SOLUTION.

Engineering

High-end optical tracking solutions support industrial product design and prototype development.
Virtual Reality (VR) is one technology supporting design and prototype phases creating a computer-generated world in which the user can perform tasks using real world movements and actions. Application of VR in prototyping phase reduces development risks and therefore costs and increases the later product success on the market.
Accurate and reliable motion tracking technology of ART guarantees a realistic interaction with virtual content.

Manufacturing

Optimize your production process by detecting problems at an early stage.
Production processes are complex and error-prone. So for a most efficient and smooth course you need to survey and control your work steps thoroughly. We at ART offer diverse tracking and localization technologies to control and optimize these processes.

Ergonomics

**Full body tracking of human beings and objects allow valuable ergonomic analysis.**
In the production planning phase it is important to know how to assemble the product as quickly as possible, and that the worker can carry out the task safely over a long period of time. To do this, ergonomic studies are performed before the actual work place is set up. With our ART Motion Capture system we offer an excellent application for ergonomic studies.

Simulation & Training

Testing and training in a virtual world – without even building a prototype.
In many areas of life, computer-aided simulations have become indispensable: Products are tested without building a prototype, operation of devices is trained, without a trainer or without the device. Even group training with people in different places only connected by the network is possible. Wherever the exact position of people or objects has to be measured reliably and accurately in real time, ART's devices are in use.
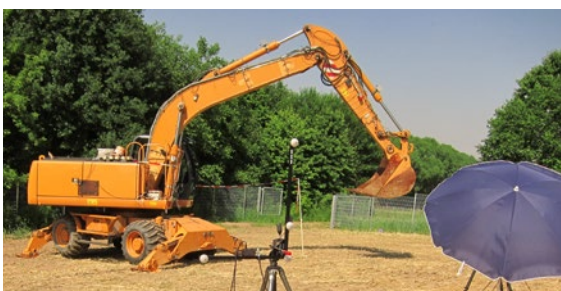
Customized Solutions

Demanding measuring tasks are a welcome challenge for our specialists.
With many years of experience in the field of optical tracking, we can solve your measurement task and adapt our existing tracking technologies to your application and needs. Find examples for already solved tasks and bring new ideas to our team.
Your request is our challenge!

PRODUCT PROGRAM

ART's product portfolio offers high-end optical tracking systems and advanced localization solutions, based on different software and technologies:

In our DTRACK based product line precise marker-based optical tracking cameras, interaction devices, markers & targets and backend software are included.

This product range is extended by our markerless CAPTA Application Software Module, a deep-learning based detection and robust tracking solution for recognition and tracking of objects. Our product range is rounded out by VERPOSE®, a camera-based system for hand-held assembly tools and very useful for quality assurance and documentation. Our products are arranged according to the application they work with, i.e. DTRACK, VERPOSE or CAPTA.

DTRACK

DTRACK is our central tracking software, the heart of any marker based optical ART tracking system. Compatible with DTRACK, ART offers a broad range of optical tracking cameras, interaction devices, markers, targets and complementary software. These products have been continuously developed and refined for more than 20 years, and installed in over 2000 systems all over the world.

CAPTA

CAPTA technology is a deep-learning based detection and robust tracking of objects in camera images, for recognition and tracking of work pieces or complete vehicle bodies, support at assembly maintenance tasks and tracking of products during marketing demonstrations.

VERPOSE®

VERPOSE® is a camera-based system for hand-held assembly tools. Its intelligent image analysis software detects predefined assembly positions. Even more: in connection with VERPOSE, the production software can ensure that assembly sequences will be correctly performed.

PRODUCTS IN CONNECTION WITH THE SOFTWARE DTRACK

Optical tracking is our original business: for more than 20 years now, ART is a leading manufacturer of high-end optical tracking cameras, interaction devices, markers and targets as well as backend and frontend software, sold and installed in many systems all over the world.

For a long time Virtual, Mixed and Augmented Reality (VR/MR/AR) have been the main application areas, but ART tracking systems can do more than that: wherever precise and reliable tracking of objects or human beings is needed, ART optical tracking technology can be helpful in many parts of the product developing process, in analysis and research as well as in various other professional scenarios. Main industry fields such as the automotive, aerospace or shipbuilding industry have been profiting from those for many years.

Tracking Cameras

ARTTRACK6/M

is one of the **world's smallest** and also **very fast** and **accurate** optical motion tracking cameras.

- **compact size** for installation inside constricted spaces like in-car-tracking or aircraft cockpits
- **high speed** – high frame rate for tracking of fast moving objects, up to 500 Hz
- **low latency** – for increased interactivity and improved VR experience
- **tracks from very short to long distances** – under 30 cm up to 4 meter
- **super-wide field of view** for integration in constricted areas
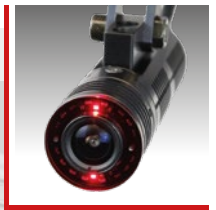
ARTTRACK6/M – the **ideal camera** for medium sized tracking volumes and **tracking inside limited spaces**

ARTTRACK5

Ideal for large tracking volumes and immersive applications

- **large tracking volume** – 7.5m for passive markers, >10m for active markers
- **reliable** – it works whenever you need it
- **for fast movements** – frame rate up to 300 Hz
- recommended for **Motion Capture**

ARTTRACK5 – industry standard for immersive 3D and large tracking volumes

PRODUCTS IN CONNECTION WITH THE SOFTWARE DTRACK

SMARTTRACK3 & SMARTTRACK3/M
Plug & play tracking solution for small volumes

- **2 cameras and integrated controller** – no separate controller needed
- **plug & play** – already pre-calibrated
- **mobile system** – easily transportable
- **precise in small tracking areas** up to 2x2 meters
- **cascading possible** – combine two SMARTTRACKs
- **small and quick** – with up to 240 Hz, and low latency <10 ms
- **SMARTTRACK3/M:** compact size – for restricted building space

SMARTTRACK3 – largest field of view of any compact tracking solution

TRACKPACK/E
Small and powerful – our cost-effective multicamera solution

- **economical solution** for applications with lower frame rate and latency requirements
- **highly precise** tracking for objects up to 4 m distance
- **wide field** of view – track into the corners
- full **ART quality:** Install once, run for years

TRACKPACK/E – our best solution for medium sized tracking volumes with up to 8 cameras

ART Controller & ART Controller/M
Suitable for all ART tracking systems

- **no** installation of **third-party software necessary**
- **integrated** 8 PoE ports
- **operational** and **data safety**
- **carries out all tracking calculations** – no performance degradation for image generation computer
- **data input** and output **via Ethernet**
- **ART Controller/M: compact & robust** – for integration in moving **vehicles** or motion platform **simulators**

ART Controller – easy remote access through DTRACK3 frontend software

PRODUCTS IN CONNECTION WITH THE SOFTWARE DTRACK

Interaction Devices

Fingertracking

ART's Fingertracking has the **world's highest finger-tip accuracy** of all variations of glove technology.

- **wireless**
- for one or two hands (4 hands with 2 users)
- available as:
    - 5finger pure
    - 3finger with tactile feedback
- **LEDs on fingertip** – unique feature of ART's Fingertracking
- **haptic feedback** – optional
- **numerous third-party software** supported

Fingertracking2 Tactile – for very precise tracking of fingers. You can push real buttons and evaluate the results in the virtual context

Flystick2+

Your PLUS for interaction

- **audio-** and **vibro-tactile feedback**
- **additional hotkeys** for extended options
- **easily replaceable** and **exchangeable cones** – for different applications
- **joystick** & easy **trigger** via button
- quickly **removable battery cap**
- USB type C charging support
- **desk/wall mounting** and redesigned **hand-grip** for comfortable handling

Flystick2+ – wireless interaction device for standard VR applications with protected passive target

PRODUCTS IN CONNECTION WITH THE SOFTWARE DTRACK

Markers & Targets

Motion Capture
Digitizing of movements

- no lycra body suit needed – **worn over normal clothes**
- **move freely** – when wearing the targets
- very robust – with tough, coated markers
- adaptable – to all human body sizes
- **optical and hybrid solution** available
- ideal for **ergonomic analysis**
- add accurate tracking of fingers – with the ART Fingertracking system
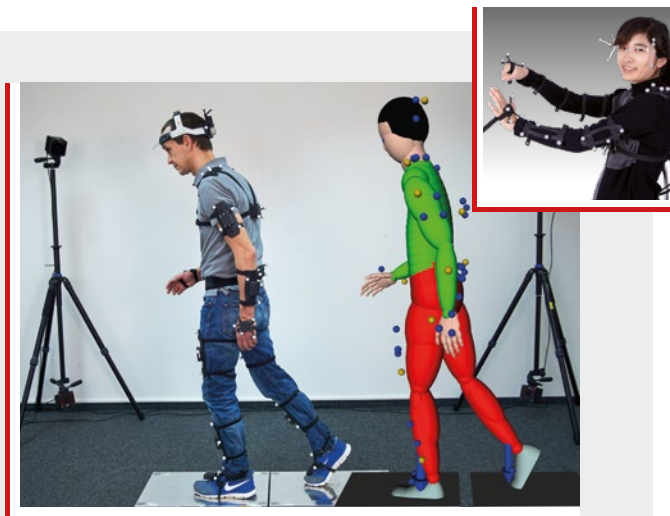
Targets
Many geometries, also customized

Targets consists of several markers (minimum 4), and provide 6DOF (degrees of freedom) data.
We distinguish between passive and active types.
In addition to our standard targets we offer several construction sets for your own targets and customized developments.

- passive reflective
    - glasses targets
    - one size fits all (generic targets)
    - hand & tree targets
- active led
    - call us to discuss your custom requirement
    - evaluation kit available

Markers
Active and passive versions available

- spherical
- coated spherical
- flat (i.e. stickers)
- active flat:
    - long range
    - outdoor
- single LED markers:
    - short range

PRODUCTS IN CONNECTION WITH THE SOFTWARE DTRACK
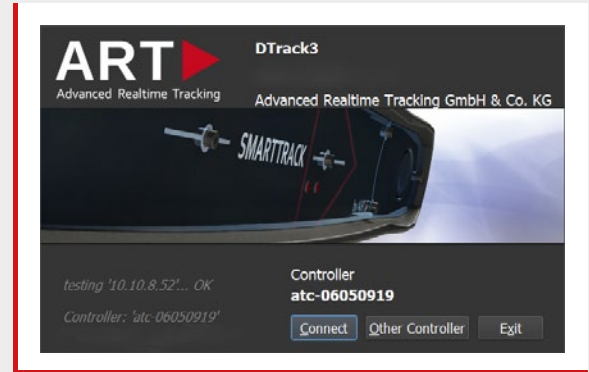
DTRACK
Our tracking software for any VR/AR application

All ART systems have been designed around an integrated and adaptable architecture that provides reliable and accurate motion tracking for immersive projection systems, wide area HMD tracking and many other VR applications.

- fast, easy, accurate
- remote control – possible
- main functions in media controller – easy handling
- more functionalities – for professional users
- password protection and accurate time synchronization – with enhanced options
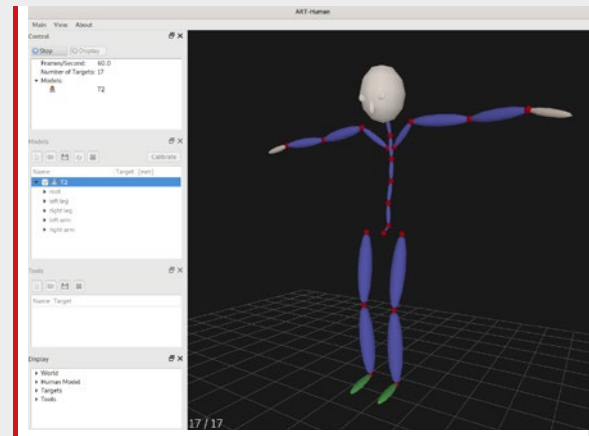- Room co-ordinate transformation – with just one tool

ART-Human
Motion capture assistance tool

- Full inverse kinematics of human skeleton model
- Simple calibration procedure with fast automatic bone-length-calibration (<1min)
- Use of 6DOF optical tracking targets

ART-Human can deliver both, real-time and recorded motion data for various application software.

ART Satellite Merger
Tracking inside occluded compartments

Do you need tracking inside a closed car body? Is this occluded compartment even moving during tracking operation?

Then the ART Satellite Merger is YOUR solution. The tracking is achieved by combining two different tracking systems:

- a superordinate system to capture the complete tracking volume
- a sub tracking system covering the inside of the compartment (or car)

The ART Satellite Merger is merging the two data streams in a way that all tracking data will be put out in the coordinate system of the superordinate system.
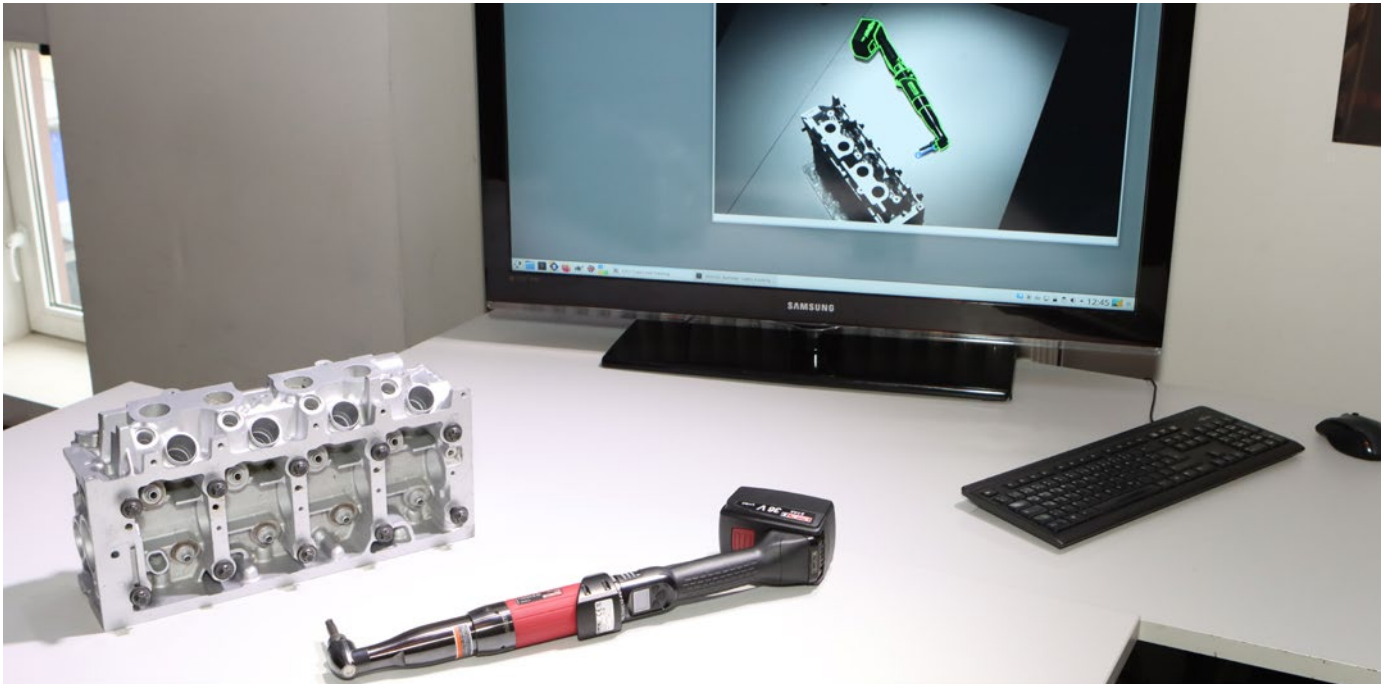

More information
about compatibilities

TRACKING WITHOUT TAGGING THE OBJECTS

CAPTA technology is a markerless deep-learning based detection and robust tracking of objects in camera images, for recognition and tracking of workpieces or complete vehicle bodies, support at assembly maintenance tasks and tracking of products during marketing demonstrations.
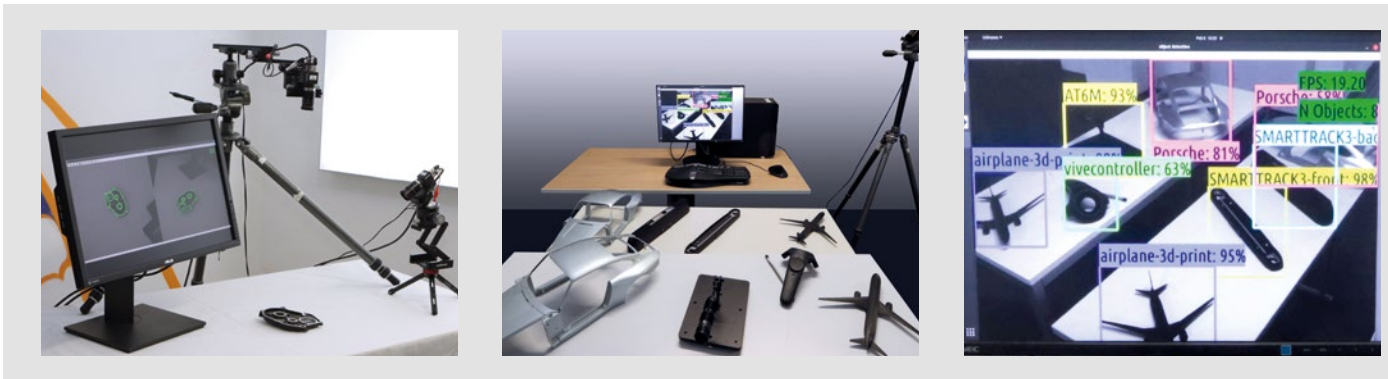
CAPTA Application Software detects objects in camera images with an initially rough simultaneous 6DOF (6 dimensions of freedom) pose estimation followed by an exact edgebased frame-by-frame tracking.

CAPTA opens up unimagined application possibilities, since now any object can be detected and tracked – and found again, especially when losing position, without the user having to intervene.

All image-based tracking algorithms have the initial task to recognize a trackable object independent from its orientation and start tracking. Once the object is identified and an initial pose is found, many algorithms work very accurately and reliably. Nevertheless, getting the initial pose is the biggest challenge and often has to be found manually.

CAPTA Application Software technology contains a robust algorithm which identifies the basic pose of a trackable object without markers immediately when it enters the camera view.

This algorithm works self-contained, so no need to connect to cloud services or similar, which allows using it inside company networks. It is also very robust against cluttered backgrounds, bad lighting conditions or partly covered objects.

Possible applications are recognition and tracking of work-pieces or complete vehicle bodies, support at assembly maintenance tasks and tracking of products during marketing demonstrations – and this even in difficult environments with poor lighting or cluttered background.

ALWAYS THE RIGHT POSITION.

VERPOSE®

Our camera-based system for hand-held assembly tools

VERPOSE® is a camera-based system for hand-held assembly tools (electrical screwdrivers, riveting tools, clinching pliers, filling devices and other special tools).

The camera is mounted on the tool and observes the assembly position.

VERPOSE® has an intelligent image analysis software to detect predefined assembly positions and sequences. Assembly positions are identified and evaluated.

Fields of application

- VERPOSE® is optimally suited for series assembly.
- It ensures the correct tool positioning in assembly processes.
- VERPOSE® can be used to release and document assembly steps.
- Compliance with given assembly sequences can be assured.
- VERPOSE® enables faster training success in assembly.

Customer demands

- Are you looking for a solution to prevent from wrong assembly?
- Do you want to ease your assembly trainings?
- Does every assembly position need its own parameters?

Then VERPOSE® could be YOUR choice of solution!

CUSTOMIZED SOLUTIONS BY ART

Since the very beginning we have been keen to create adapted variants of our product range or even completely custom solutions to fit with certain customer's special requirements.

Our range of adapted tracking objects includes specially designed **clip-on targets** for the most popular models of Led shutter glasses as well as the best-selling HMD's for industrial use.

The ART in-house software team further enhance the professional integration of our systems with the develop-ment of drivers and plug-ins for games engines, middleware applications as well as completely new software features for OEM projects.

Finally, we design and produce special variants of our off-the-shelf tracking products, such as the **ARTTRACK5/C-IF for outdoor use** under bright light conditions, or a **wired version of our Flystick.** We offer custom mountings so that our **VERPOSE®** camera can be attached to a diverse range of hand held assembly tools.
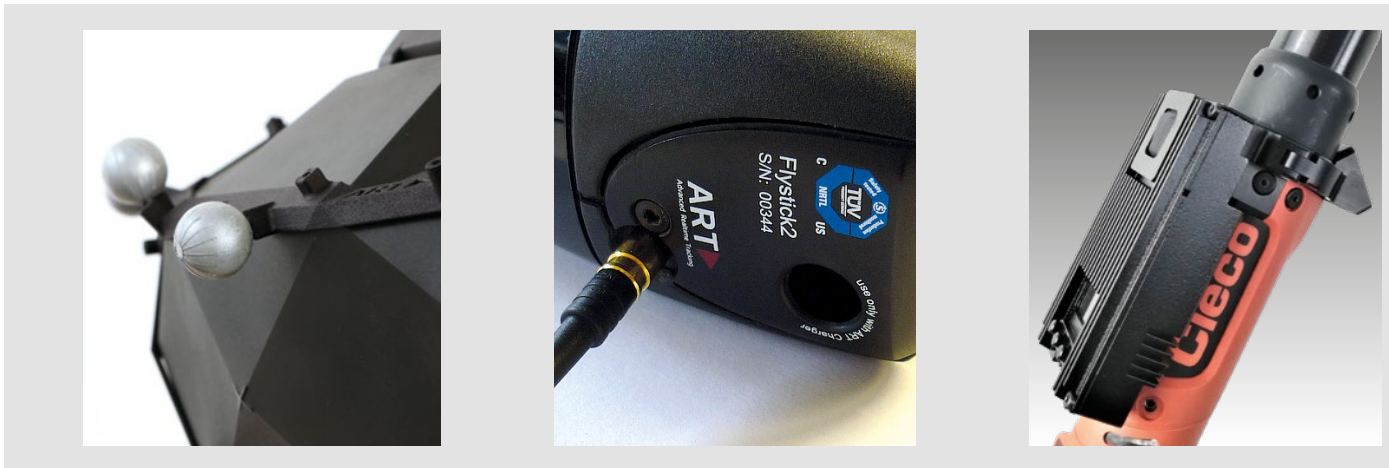

Tool Tracking technologies

Tool Tracking is used to support and optimize your production process, without delay in the workflow. The individual combination of our three technologies DTRACK, CAPTA and VERPOSE® is able to cover a wide range of applications. While DTRACK and CAPTA return coordinates, VERPOSE® supplies the identifier of a position.

Based on markers on the tools, DTRACK is able to track the positions of several tools at the same time. DTRACK can document where the tool is used in the assembly process, also in relation to a moving assembly platform. A separate application software notes the correct position of the tool on the work schedule.

Our object-detection solution CAPTA uses the geometry of the tools. It works with a camera system that views the assembly area, where it detects and tracks the position of a tool. The best part of all: CAPTA also identifies work points even in hidden places!

The VERPOSE® camera returns images that characterize the location of the tool on a workpiece, independent of the assembly place. It is therefore best suitable for flexible positioned assemblies and proven in a variety of industrial use cases. On top of that, VERPOSE® is easy to install.
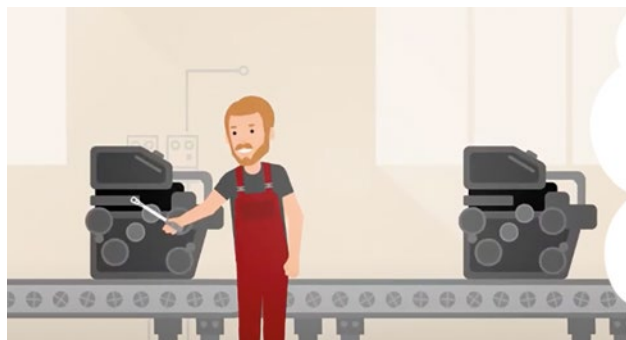

Watch Tool Tracking video

ART – ALWAYS THE RIGHT SOLUTION.

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Your expert for optical tracking and innovative object localization

Since 1999, Advanced Realtime Tracking GmbH & Co. KG is one of the **leading manufacturers of premium optical motion tracking systems** for Virtual and Augmented Reality (VR/AR). Typical customers and users are the automotive and aviation industries as well as research institutes and universities.

With the mobile camera system **VERPOSE**® and the markerless recognition solution **CAPTA,** ART offers further intelligent solutions for object recognition and localization.

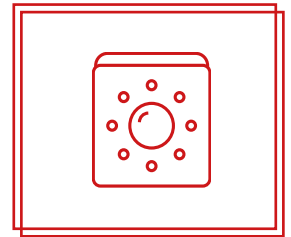All ART products are highly precise, reliable in use and can be customized.
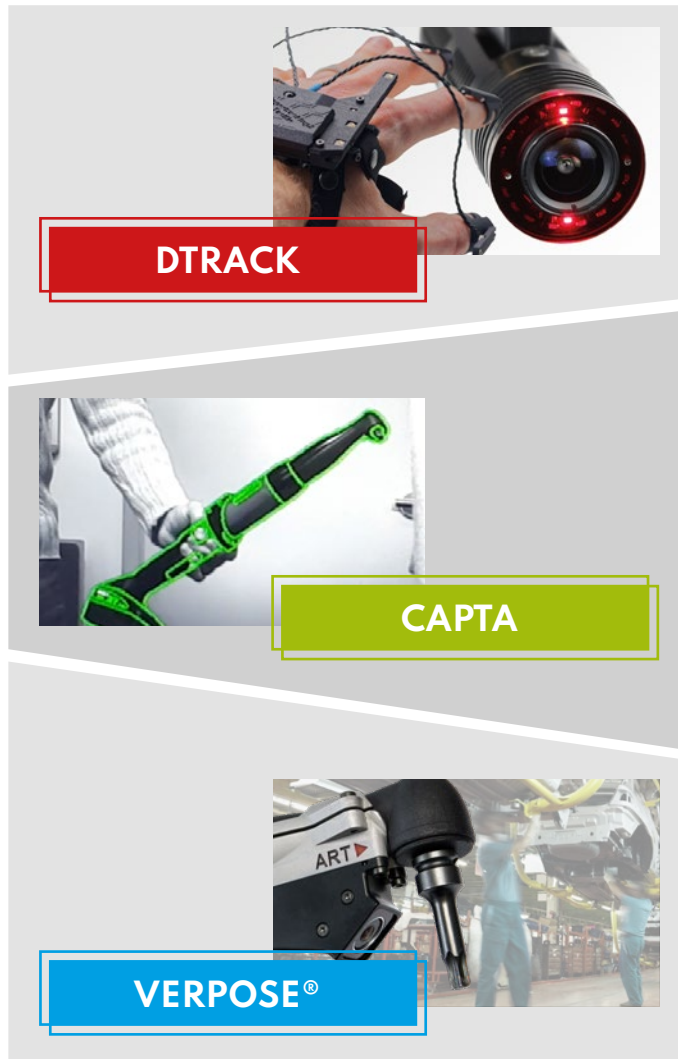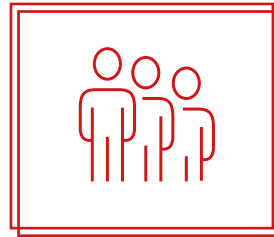
DTRACK

CAPTA

VERPOSE®

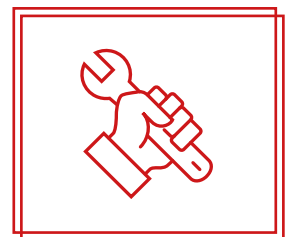Made in Germany

> 9500 cameras sold

38 employees

>100 partners
in our network

> 450 clients in
> 42 countries

> 2700 installations

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