abf diagnostics GmbH

Digital Crime Scene Documentation 2023

Automated Spherical Imaging

Automated Stitching

3D Reconstruction

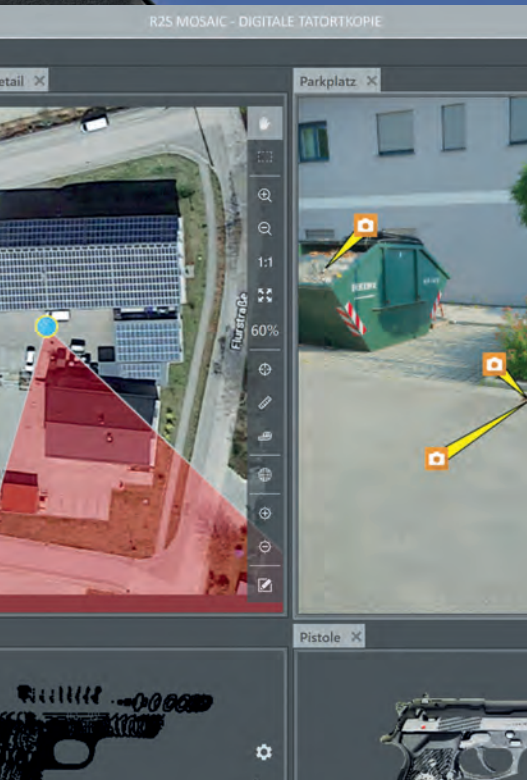**Digital Crime Scene Tours**

Documentation and Photogrammetry

High Resolution Sphericals and Point Clouds

Case Presentations and Analysis

Efficient Case Management

**Virtual Crime Scene Tours –
Easy, Fast and Efficient**

Digital Crime Scene Documentation 2023

Introduction into digital Crime Scene Documentation (dCSD)

Automated panoramic imaging is a fundamentally new approach for crime scene documentation and digitalisation. By utilizing newest automation technologies we are capable of visually preserving a crime scene within a few minutes in its original state. Modern robotics and image processing technologies have reduced the (sometimes) cumbersome process of photographic documentation and post-production work to the "push of a button". With our documentation tools even lay users transfer a site of interest into the "Digital or Virtual Reality (VR)" for later presentation and evaluation.

Automated crime scene imaging is offering a number of significant advantages:

▪ Within minutes after arrival and with only minimal intrusion a scene of crime is photographically captured and preserved in its primary state.

▪ Third parties not required on site may be granted access to a crime scene in the virtual reality. This strategy minimizes risks of contamination and unintentional manipulations.

▪ A virtual crime scene may be extended with a few clicks to a meaningful digital case file by adding relevant digital assets.

▪ Case related questions arising after officers have left a scene can be clarified in the digital duplicate.

▪ A photorealistic tour through a scene of crime provides excellent illustrative material for judges, prosecutors, lawyers and others involved in an investigation.

The range of applications for digital "twins" of a site of interest is not limited to crime scene work. Other applications in the policing area are:

▪ Case and event presentations in team meetings

▪ Case discussions and analysis

▪ Emergency planning, e.g. for major public events

▪ Intra- and inter-divisional operational planning meetings

▪ Visual documentation and management of events and locations

▪ Education and training

3 Simple steps to create a digital Copy of a Crime Scene

Modern automation technologies are simplifying the photographic documentation process of a scene of crime to the "push of a button". Even challenging environmental conditions can be captured with brilliant colours and in high resolution without any prior photographic knowledge.

1   Automated Spherical Imaging

Once you have captured a scene of crime in high resolution individual images are "stitched" together with a novel, user-friendly image processor software. The software runs fully automated and creates optimally illuminated panoramic images in high resolution.

2   Automated "Stitching"

In step 3 spherical images are combined with additional digital assets to generate a comprehensive visual copy of a crime scene. The VR crime scene may be extended to a virtual case file which can be entered even after months or years to answer case relevant questions.

Case related digital assets and information like photos, testimonies, expert witnesses, documents, videos or audios are integrated by simple "drag and drop".

3   Create Digital Crime Scene
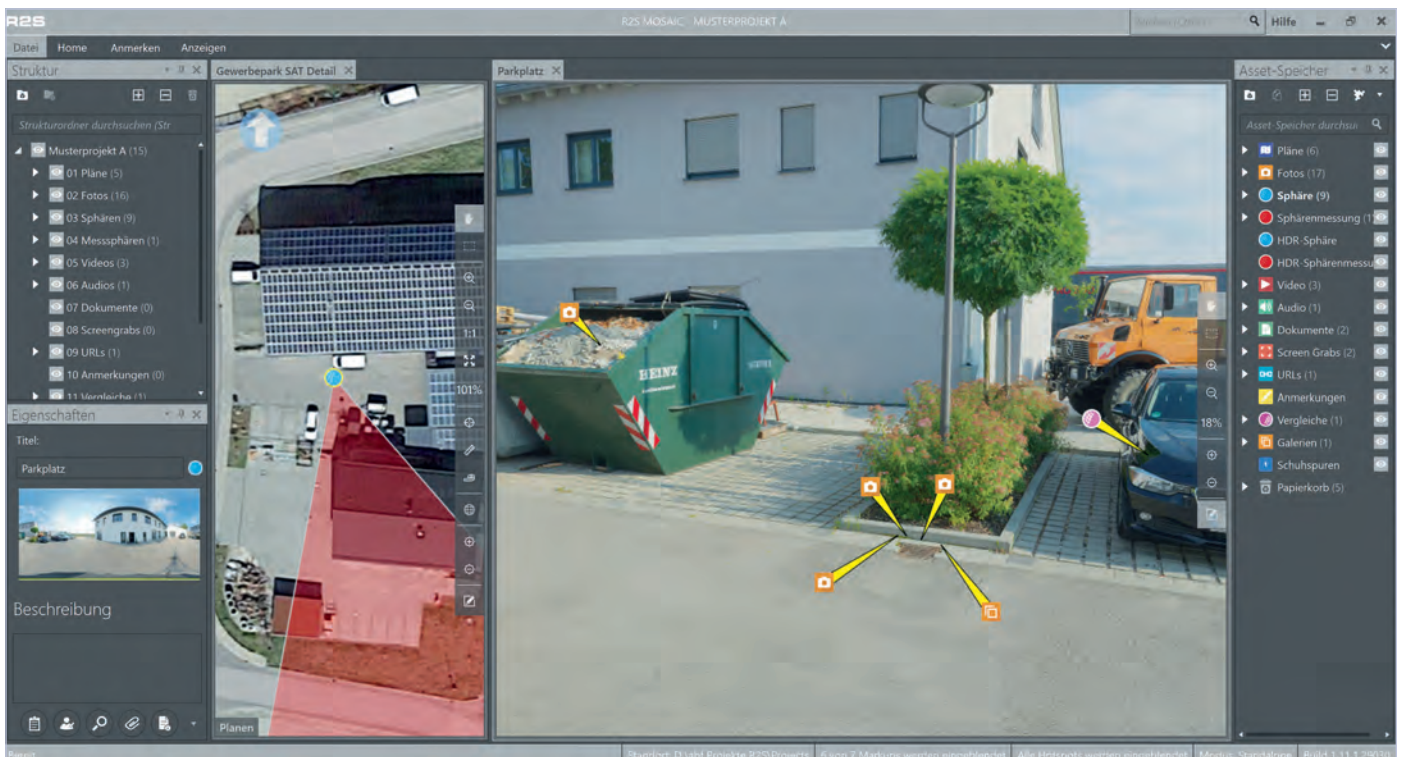
High Resolution Crime Scene Documentation (CSD) Systems

1
CSD500™-P
Photogrammetry System

Fully automated system with

- Integrated camera
- Integrated lighting
- Measurement tripod
- Automated stitching tool
- R2S Mosaic CSD Software
- Accessories

Capturing Time: 2.5 minutes
Max. Resolution: 512 MPx
Dynamic range: 26 F-stops

2
CSD500™-D
Documentation System

Fully automated system with

- Integrated camera
- Integrated lighting
- Light-weight tripod
- Automated stitching tool
- R2S Mosaic CSD Software
- Accessories

Capturing Time: 2.5 minutes
Max. Resolution: 512 MPx
Dynamic range: 26 F-stops

High Speed Crime Scene Documentation (CSD) Systems

3
CSD100™-P
Photogrammetry System

Fully automated system with

- Integrated camera
- Measurement tripod
- Automated stitching tool
- R2S Mosaic CSD Software
- Accessories

Capturing Time: 30 seconds
Max. Resolution: 128 MPx
Dynamic range: 26 F-stops

4
CSD100™-D
Documentation System

Fully automated system with

- Integrated camera
- Light-weight tripod
- Automated stitching tool
- R2S Mosaic CSD Software
- Accessories

Capturing Time: 30 seconds
Max. Resolution: 128 MPx
Dynamic range: 26 F-stops

R2S Mosaic ...

## A comprehensive digital platform to summarize, analyse, present and report crime scene information

▪ Import crime scene information by a simple "click"

▪ HDR sphericals, (floor) plans, photos, documents (Word, PDF, etc.), fingerprints, audios, videos, testimonies, point clouds, 3D models, expert and lab reports, etc.

▪ Create a copy of your scene by "drag and drop"

▪ Standalone or network installations available

▪ User interface in English, Spanish, French or German

Measuring in plans, sphericals and point clouds

▪ Measurement tripod allows to create measurement sphericals

▪ Measurement sphericals can be used for photogrammetric measurements

▪ Export measurement data as .DXF, .xls or .txt files

▪ Measure distances in plans and maps

▪ Distances, angles and areas can be measured in point clouds

Graphical elements (markups), comparison and gallery assets

▪ Crime scene copies can be enhanced with graphical elements (arrows, text elements, (semi-transparent) rectangles, polygons or circles, points, etc.)

▪ Hide confidential information (license plates, faces, etc.)

▪ Combine two and more images in one asset

▪ Compare finger or shoe prints
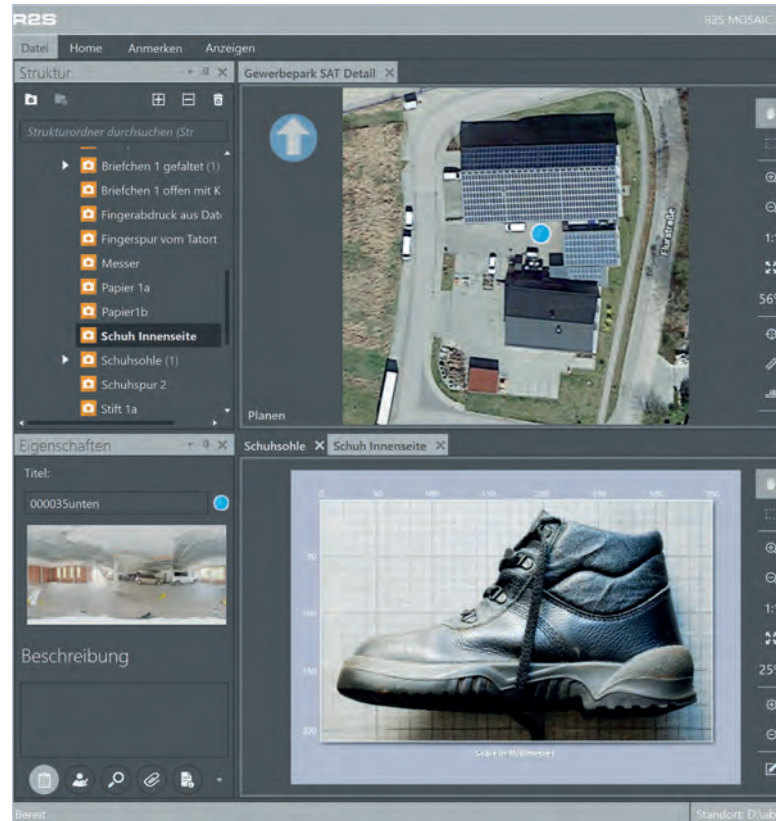
... our powerful CSD and Photogrammetry Software


Export or publish your project results

- Projects can be published as an independent, executable crime scene tour and presented independently of the original software

- Publications are protectable with a password or an expiry date

- Links and measurement tools are applicable in publications

- Additionally, a PDF copy or a Word report of your R2S Mosaic project can be created

Point clouds and 3D-models

- Point clouds can be embedded in your digital crime scene copy

- They will become part of your publication

- Examples: 3D models of your scene, digital models of weapons or evidence items, etc.

Internal audit trail

- Each step in the project development work is automatically documented by an internal audit function

- Audit trail can be exported as .csv, .xls or .pdf file
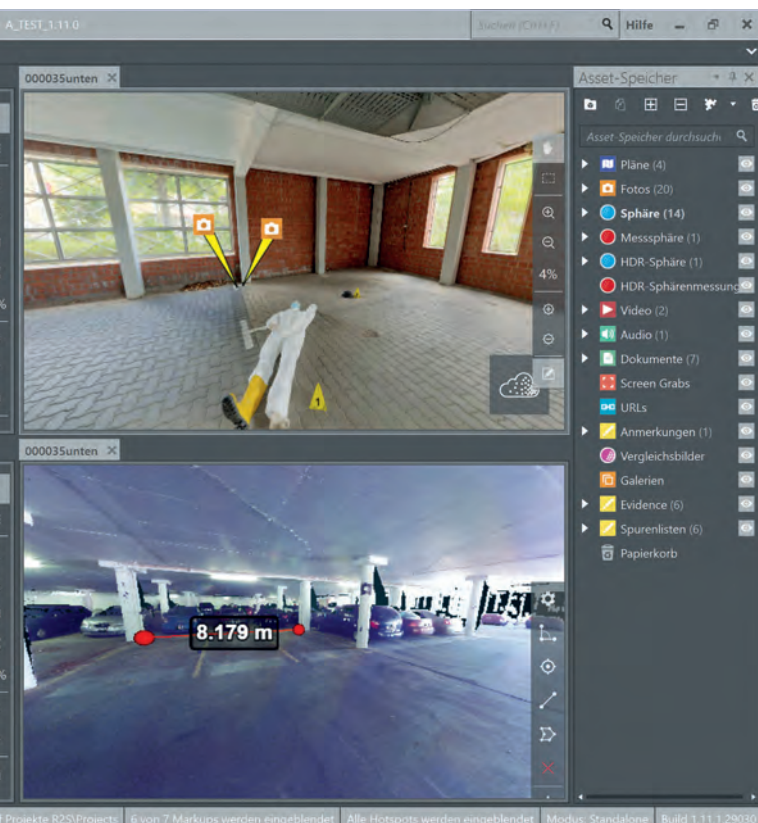
CSD Systems in Operation

The engineering concept of the CSD system is aiming for a fast and secure workflow under operational conditions. Our panorama robots are standalone systems which run completely autarchic and require no additional components apart from a tripod.

At the scene of crime the panorama robot is removed from the transport case and mounted on the tripod.

After switching on the device it initializes itself automatically and you only have to press "Start".

The complete capturing process is controlled by the robot. It moves the integrated camera to predefined capturing positions and triggers the HDR bracketing.

The individual images are automatically stored on the SD card which is subsequently processed by a dedicated camera specific stitching software. The calculation process is also automated and runs user independent.

Top Results – in every operational Situation

Whether in bright sunshine ...

... or at night

... in closed rooms

or in a dark basement ...

**... with our CSD systems
you always achieve optimal work
results**

Automated Panorama Robots with integrated Cameras

Hardware

piXplorer 500 MIII Forensik

Automated 2-axis panorama head with integrated camera, lighting and dedicated stitching software, portable high-performance solution for high resolution panoramic imaging at the "push of a button", the panorama camera is calibrated and provides highly accurate sphericals, the comprehensive system for **high resolution** crime scene documentation including hard-shell case, IR-remote control, polarization filter, 2 SD cards and C-Wrench.

- Resolution up to 512 Megapixel
- Dynamic range: 26/32 aperture-stops
- Capture time: 2.5 minutes per location
- Field of View: 360° x 180°
- Battery performance up to 70 locations
- Operational temperature range: -5°C to 40°C
- Weight: 3.3 kg
- Dimensions (mm): 190 x 330 x 130

piXplorer 100 Forensik

Automated 2-axis panorama head with integrated camera and dedicated stitching software, portable high-performance solution for high speed panoramic imaging at the

"push of a button", the panorama camera is calibrated and provides highly accurate sphericals, the comprehensive system for **rapid** crime scene documentation including hard-shell case, IR-remote control, 2 SD cards and C-Wrench.

- Resolution up to 128 Megapixel
- Dynamic range: 26 aperture-stops
- Capturing time: 30 seconds per location
- Field of View: 360° x 180°
- Battery performance up to 650 locations
- Operational temperature range: -5°C to 40°C
- Weight: 3.0 kg
- Dimensions (mm): 190 x 330 x 130

Useful Accessories

Hardware

Mini-Tripod

Torsion resistant wooden tripod, especially suited for capturing sphericals in confined spaces or low heights (e.g. in a car or underneath a table)
▪ Min. / Max. height: 10 / 40 cm
▪ Weight: 0,8 kg
▪ Max. load: 14 kg
▪ incl. quick change adapter and transport bag

Hard-shell backpack

... robust and waterproof, with precisely fitting foam inlay, available for the transport of the piXplorer or piXplorer 500 Forensik.

Height adjustment adapters

... for coloration of point clouds, height adjustment between the optical center of a laser scanner and the nodal point of our panorama robots, both points have to be aligned to allow accurate coloration of point clouds.

Our Company

abf diagnostics GmbH is an innovative new enterprise located in Kranzberg close to Munich, Germany.

In our business unit "DNA sample collection" we are developing, manufacturing and marketing products and solutions for the detection, collection, storage and processing of biological samples and traces.

In our business unit "Fingerprint Detection and Documentation" we are developing and marketing products for the contactless, photographic documentation of fingerprints and other forensic traces.

In the area of "Digital Crime Scene Documentation" abf diagnostics offers comprehensive solutions for the rapid, automated capturing of crime scenes, accidence sites and other areas of interests including the creation of digital copies and 3D-Reconstruction.

We are cooperating with leading companies in pre-analytics and digital sensor technologies and are marketing our products into the forensic, medical and veterinary diagnostics markets.

Our Markets

Our products and solutions for the detection, collection, storage and processing of biological samples and traces are routinely applied in the following areas:
▪ DNA sample collection at the scene of crime and in the laboratory
▪ Forensic and Human Genetics
▪ Paternity Testing, Parentage Investigation and Heritage Research
▪ Veterinary Medicine, Forensics and Genetics
▪ Forensic Toxikology

Our business unit "Fingerprint Detection and Documentation" covers the following areas of application:
▪ Forensic Evidence and Fingerprint Photography
▪ Contactless Dactyloscopy

Our products for "Digital Crime Scene Documentation" are widely used for the
▪ Creation of high quality Virtual Reality copies of scenes of crime ("Digital Twins")
▪ Rapid, digital documentation of traffic accidents
▪ Digital crime scene reporting and case management

abf diagnostics GmbH
Gewerbepark 14
D-85402 Kranzberg
Germany
T +49 8166 9986 130
F +49 8166 9986 140
E info@abfdiagnostics.com
www.abfdiagnostics.com