

FSM 2009

Forensic and accident analysis examples from Europe

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The following case examples have been provided by:

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Accident Assessors, Munich, Germany

Gendarmerie Nationale

Institut de Recherche Criminelle, Paris, France



Forensic Pathology – ULSS6 Vicenza

Vicenza, Italy



Accident Assessing in Germany

Ingenieurbüro Nickl, accident assessors, Munich, Germany

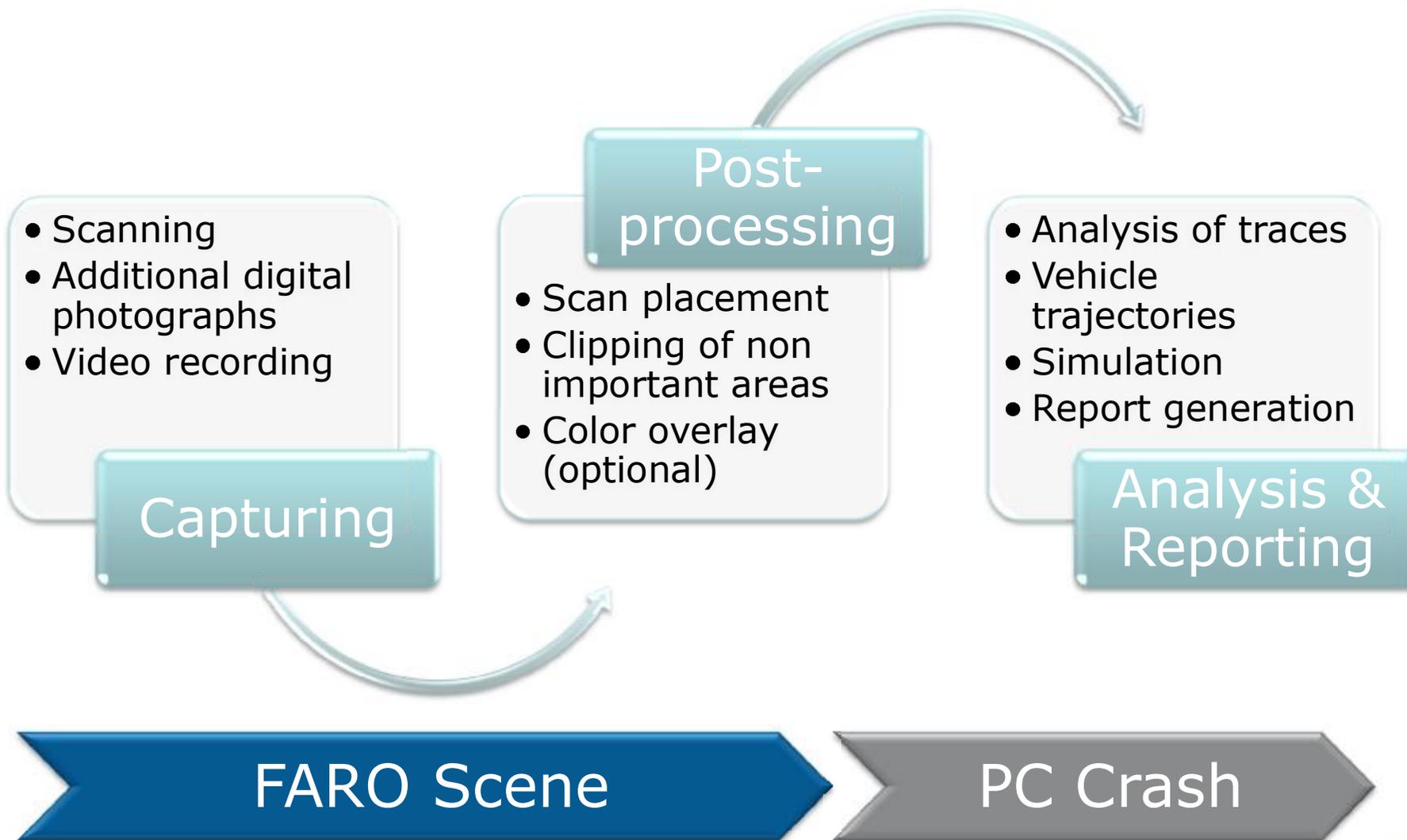
- Background:*
- Founded in 1962 – the oldest accident experts in Munich
 - Working in all areas of road traffic assessments (accident analysis, biomechanics, anthropology...)
 - In average 300 cases/year
 - Laser Scanning is used in ca. 10% of the cases

Scanning since: 2008

- Other tools:*
- Total stations
 - Measurement wheels

- Key Benefits:*
- Quick capturing of accident scenes
 - Complete recording of on-site geometry
 - Technological advance of competing companies

Typical workflow – Accident Analysis



Reconstruction of a motor cycle accident

Case: Fatal motor cycle accident at a drivers training

Question: How did the accident happen?
Was the accident avoidable?
Is the insurance company of the person causing that accident liable?

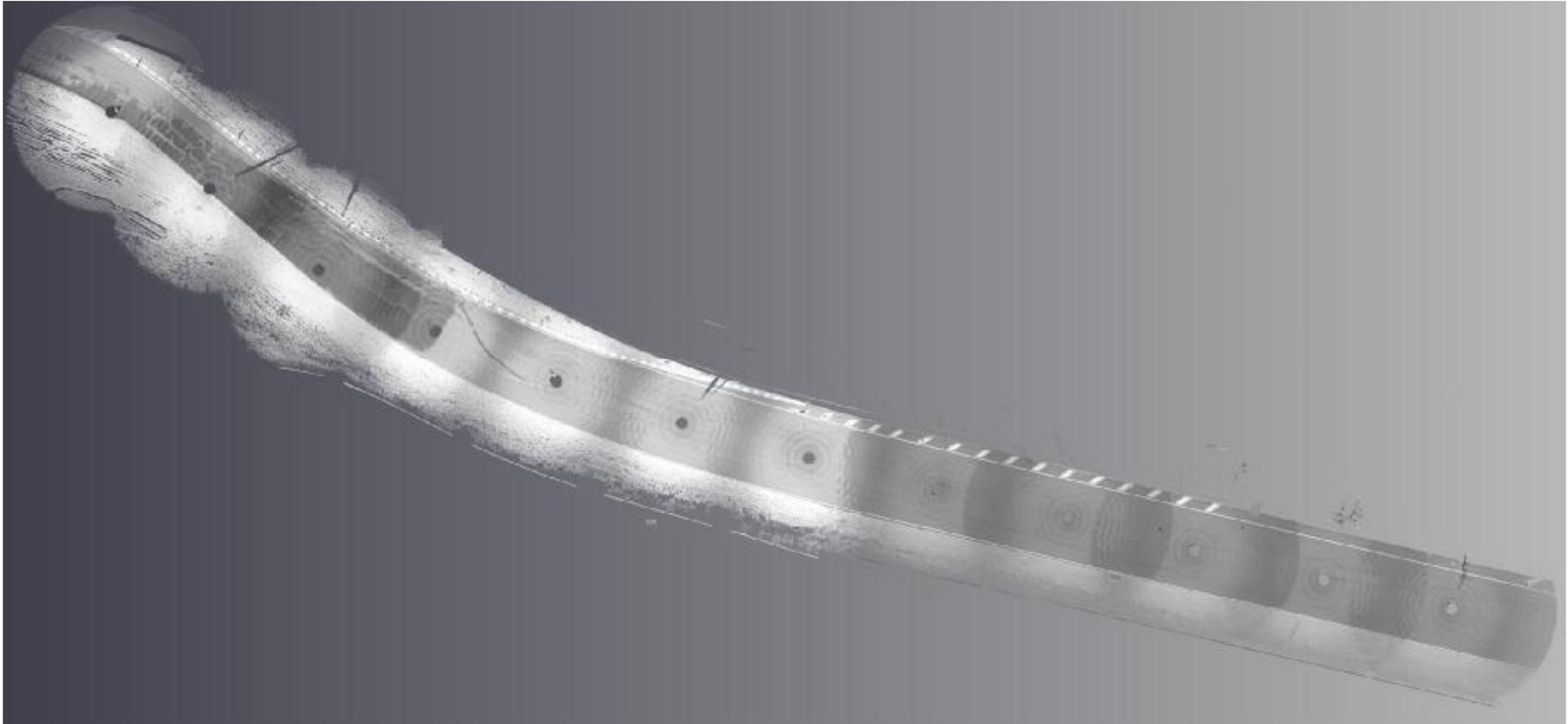
Location: Automotodrom Grobnik, Croatia



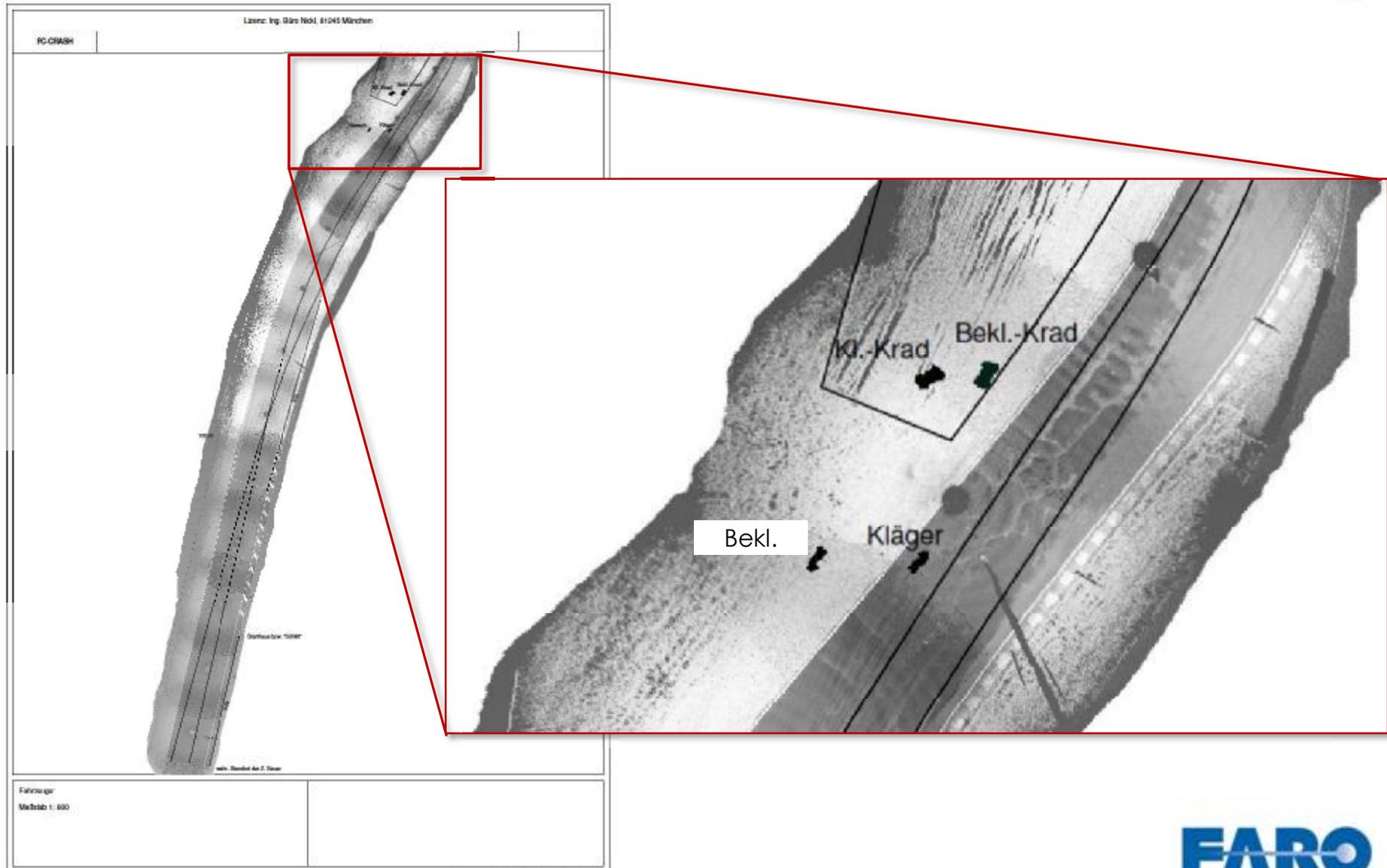
Accident area



Accident area – scanned with 12 positions



Analysis and reporting in „PC Crash“



Crime Scene and Accident Analysis in France

Gendarmerie Nationale, Institut de Recherche Criminelle, Paris, France

Background: Image processing division using “imaging technologies” for many years

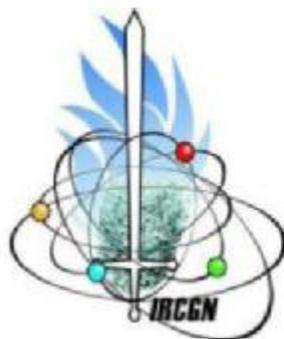
Scanning since: End of 2007. Worked on over 20 cases since then.

Other tools:

- Standard imaging equipment
- Ground Penetrating Radar (GPR)

Key Benefits:

- Quick capturing of accident scenes
- Complete recording of on-site conditions
- Use of the same data for multiple analysis



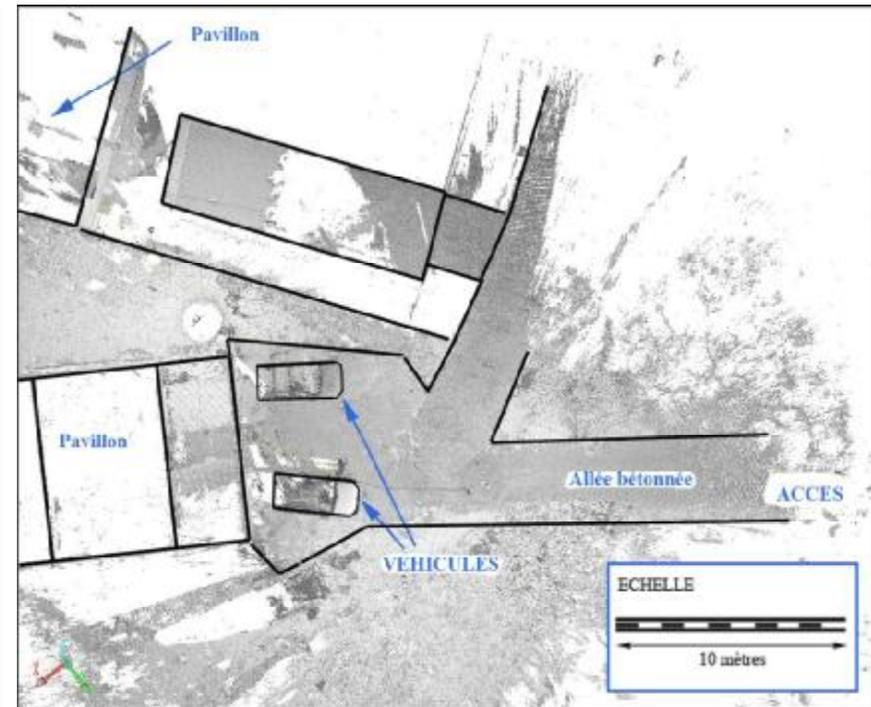
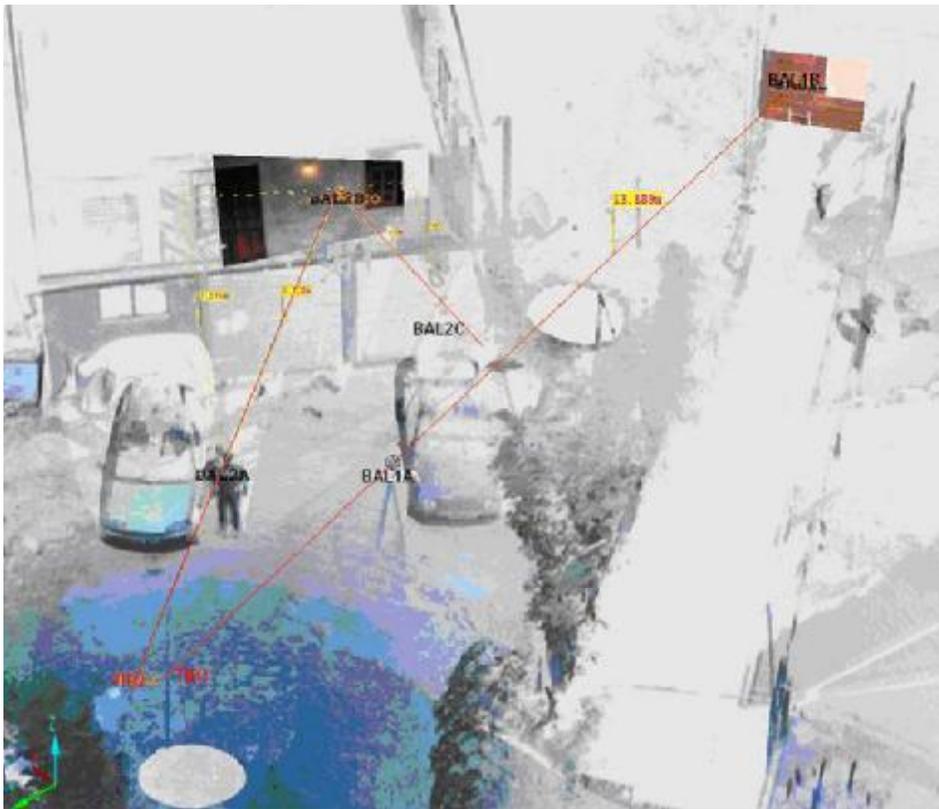
Shooting reconstruction, case 1

- 3 victims (1 killed, 2 wounded)
- 2 suspects (one with a 9mm pistol, the 2nd with a pump gun)
- Ballistic expert and pathologist did not agree on the origin of the shot which wounded the 3rd person



Shooting reconstruction, case 1

- Bullet traces and suspect's testimony were used to reconstruct the scene
 - Additional bullet-hole found on the neighbor building shows the killer's position when the 1st victim was killed
 - Analysis shows clearly that the 3rd person may have been wounded by the reflected bullet which wounded the 2nd victim. Both shots have been fired from the same position



Shooting reconstruction, case 2

- Training case
- Person was found shot in a parking garage

Workflow:

- 1) Scan the scene
- 2) Take additional photographs of traces

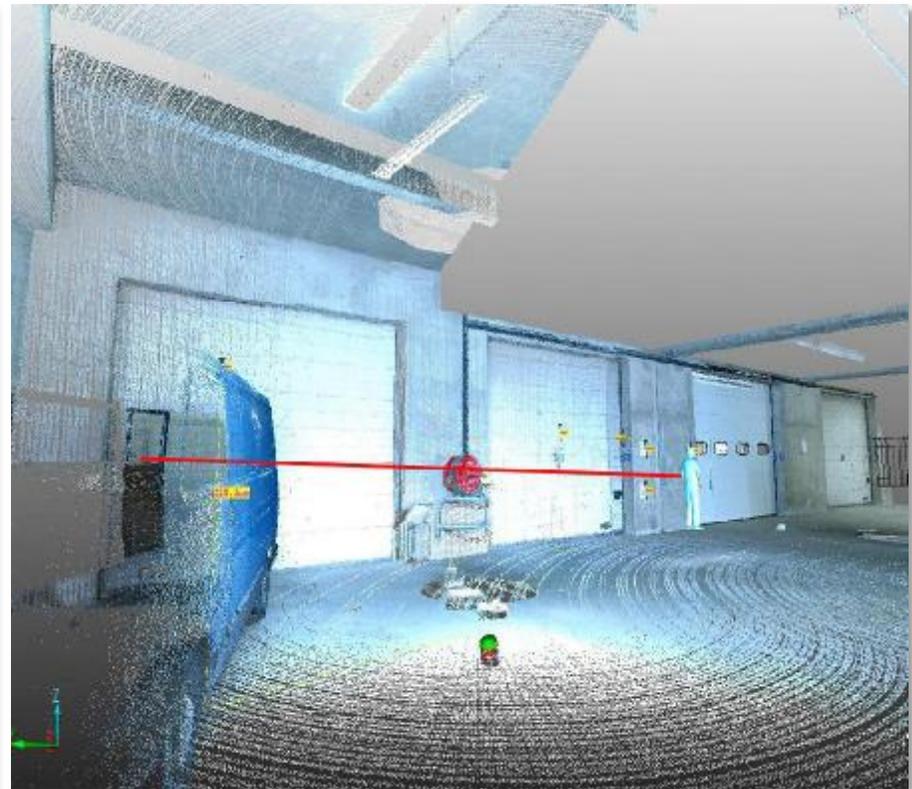
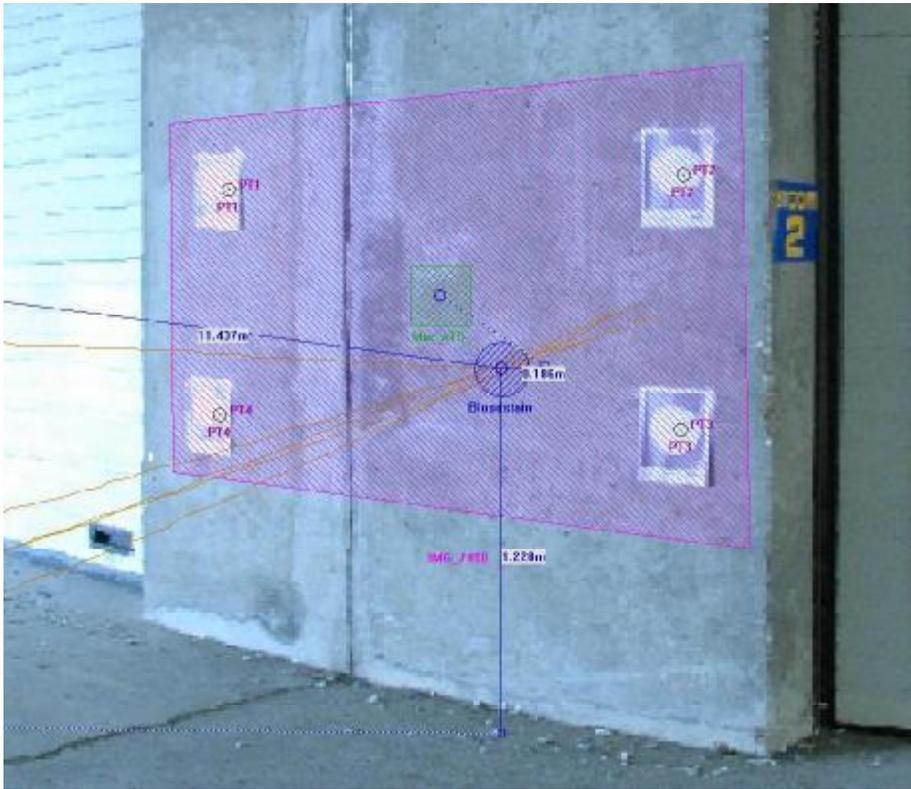


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Shooting reconstruction, case 2

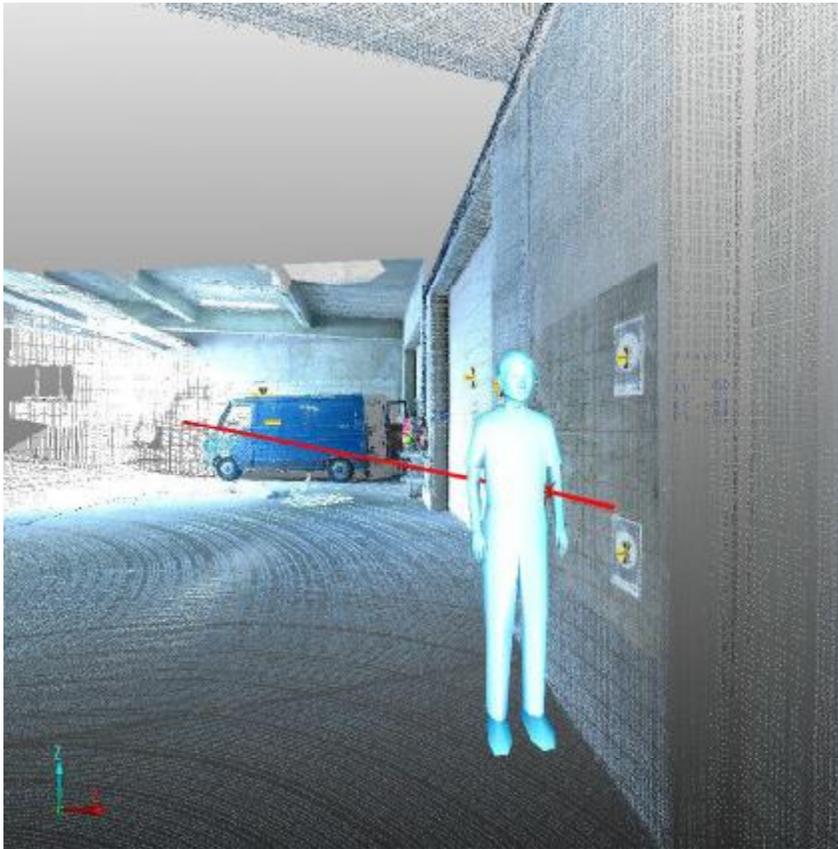
Workflow:

- 3) Register the scans
- 4) Import and align detail photographs with the scan data
- 5) Analyze blood spatter patterns and bullet marks



Shooting reconstruction, case 2

Workflow: 6) Simulate possible scenarios
7) Visualize the results



Train accident reconstruction

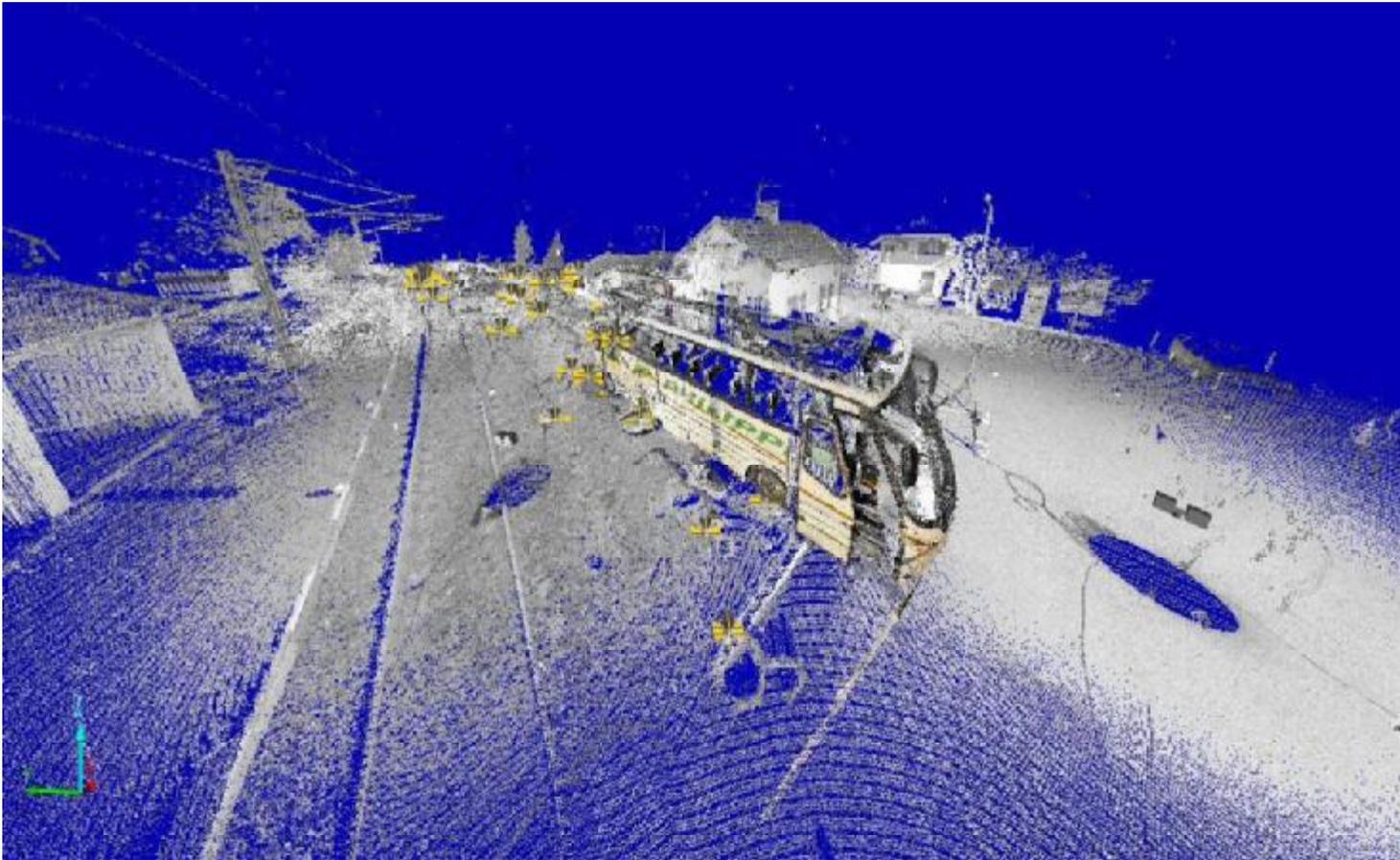
- Case:*
- Bus had a breakdown at a railroad crossing
 - Approaching train could not stop in time
 - Several pupils were killed, many injured

Question: - Would the crash have been avoidable by the train pilot?



Train accident reconstruction

- Workflow:*
- 1) Scene was captured with about 20 scans
 - 2) Place the scans
 - 3) Create video animations from the view of the train pilot to analyze the accident



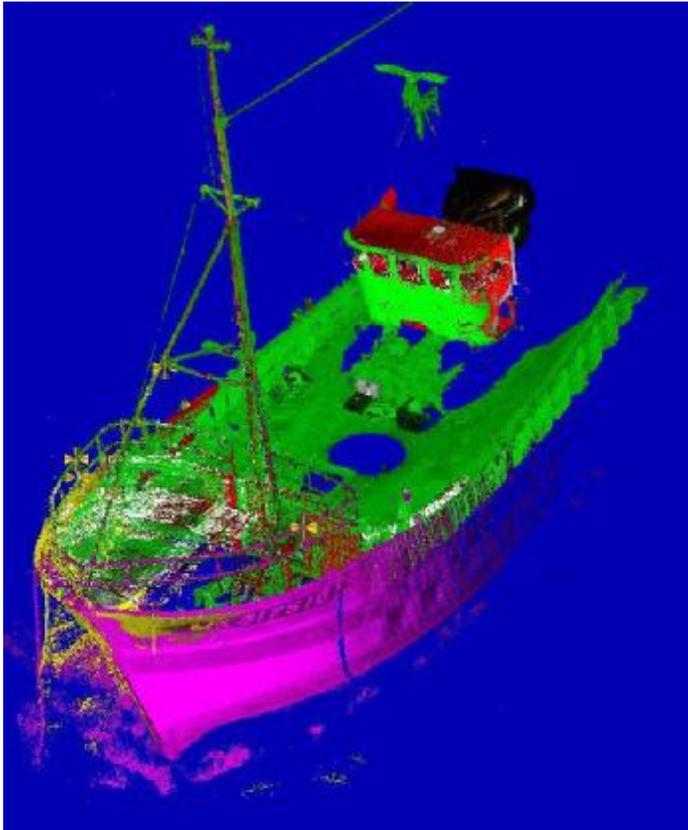
Reconstruction of a ship collision

Case:

- Crash between a freight ship and fishing boat
- Fishing boat sank

Question:

- What happened?
- Who was responsible?

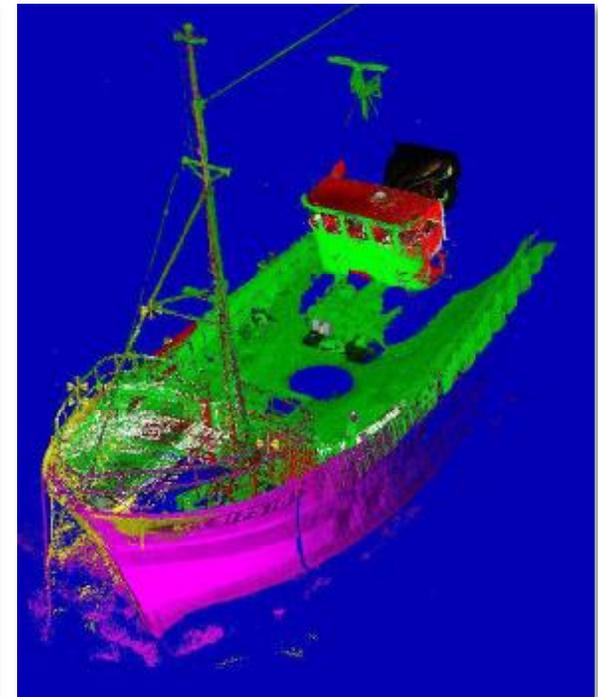
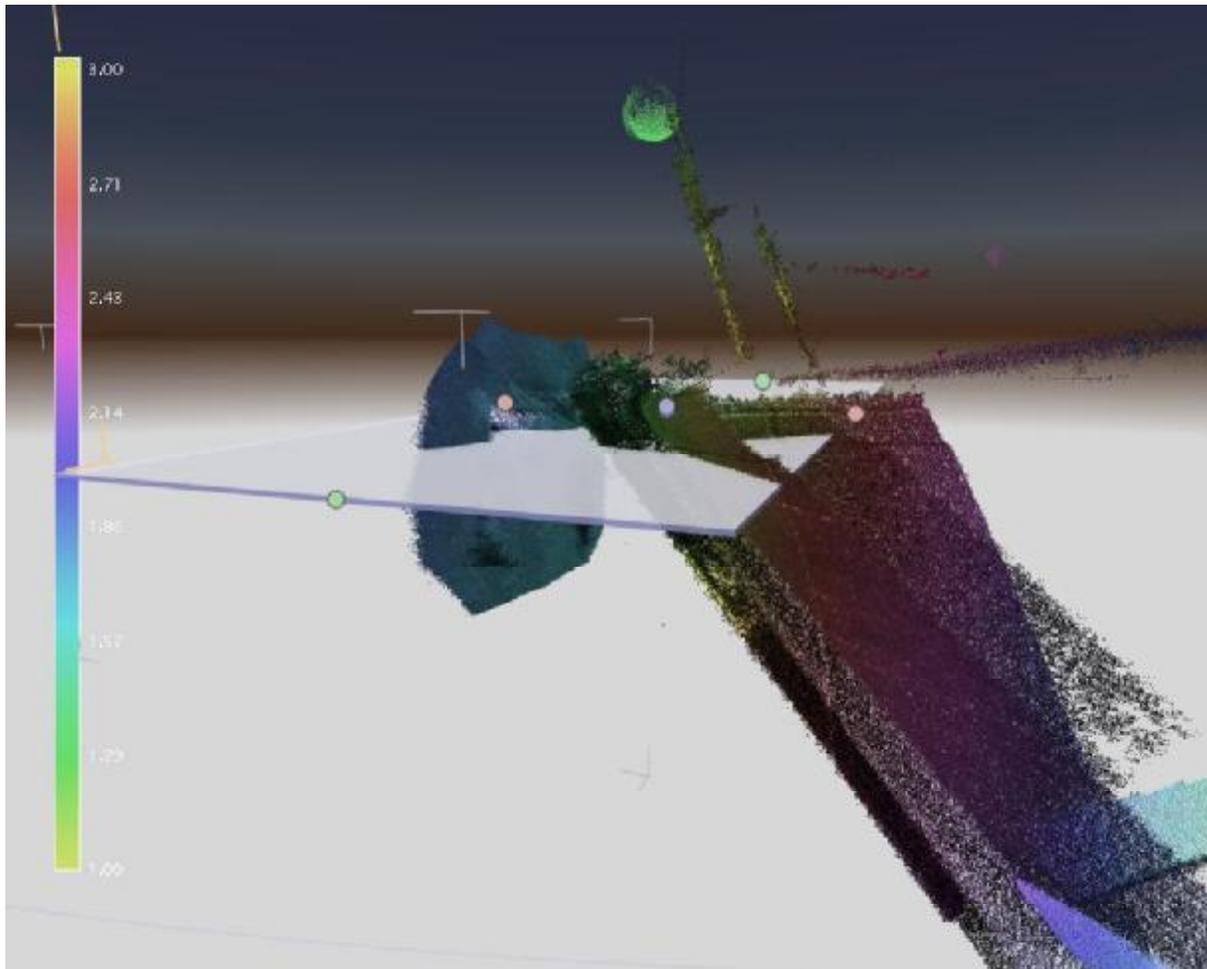


Workflow:

- 1) Scanning the freight ship
- 2) Scanning of a fisher boat of the same type

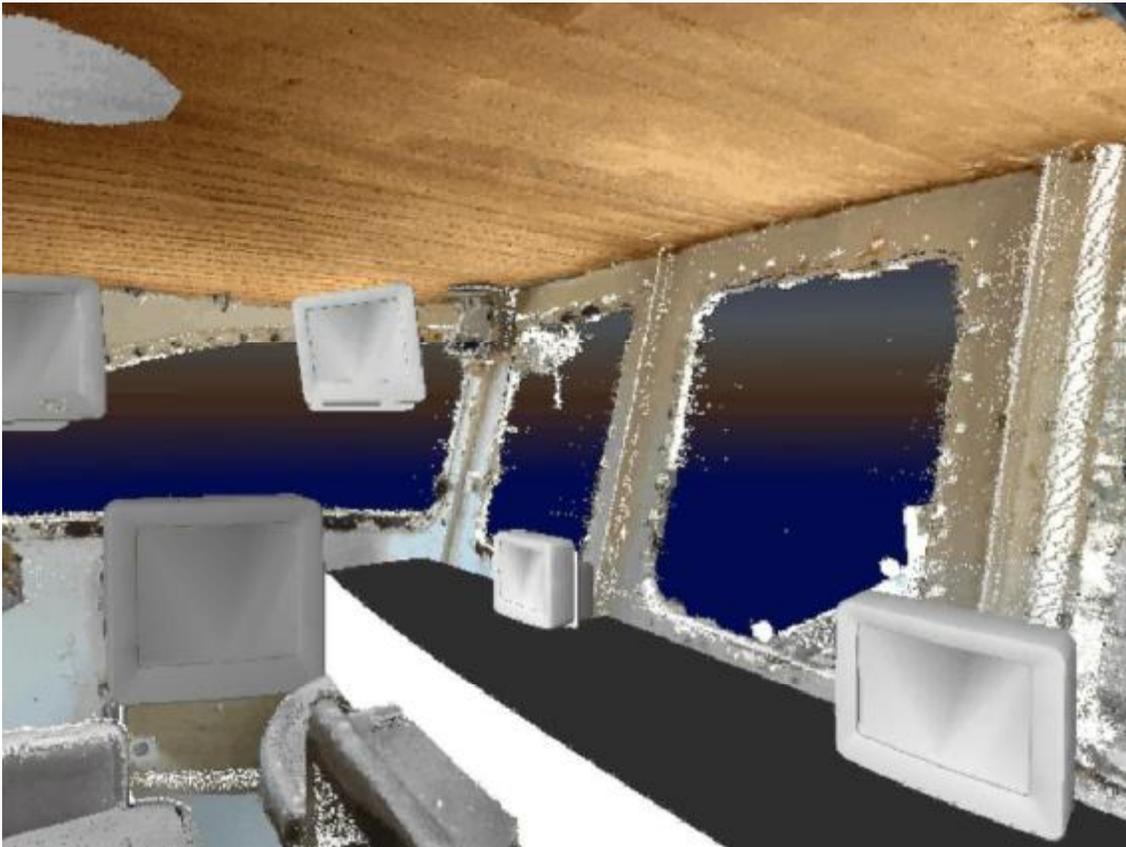
Reconstruction of a ship collision

Workflow: 3) Compare the imprint of the stern of the fishing boat in the hull of the freight ship to confirm they fit together



Reconstruction of a ship collision

- Workflow:*
- 4) Reconstruct the bridge of the fishing boat
 - 5) Use documentation and photographs to add missing equipment to the scan data
 - 6) Create an animated simulation to analyze the visibility situation at the time of the crash



Crime Scene and Accident Analysis in France

Forensic Pathology – ULSS6 Vicenza, Vicenza, Italy

Background: Pathological institute of the University of Vicenza

- Supports the police forces in the area
- About 300 examinations/year

Scanning since: September 2007

Other tools:

- Digital photography
- Standard measurement equipment

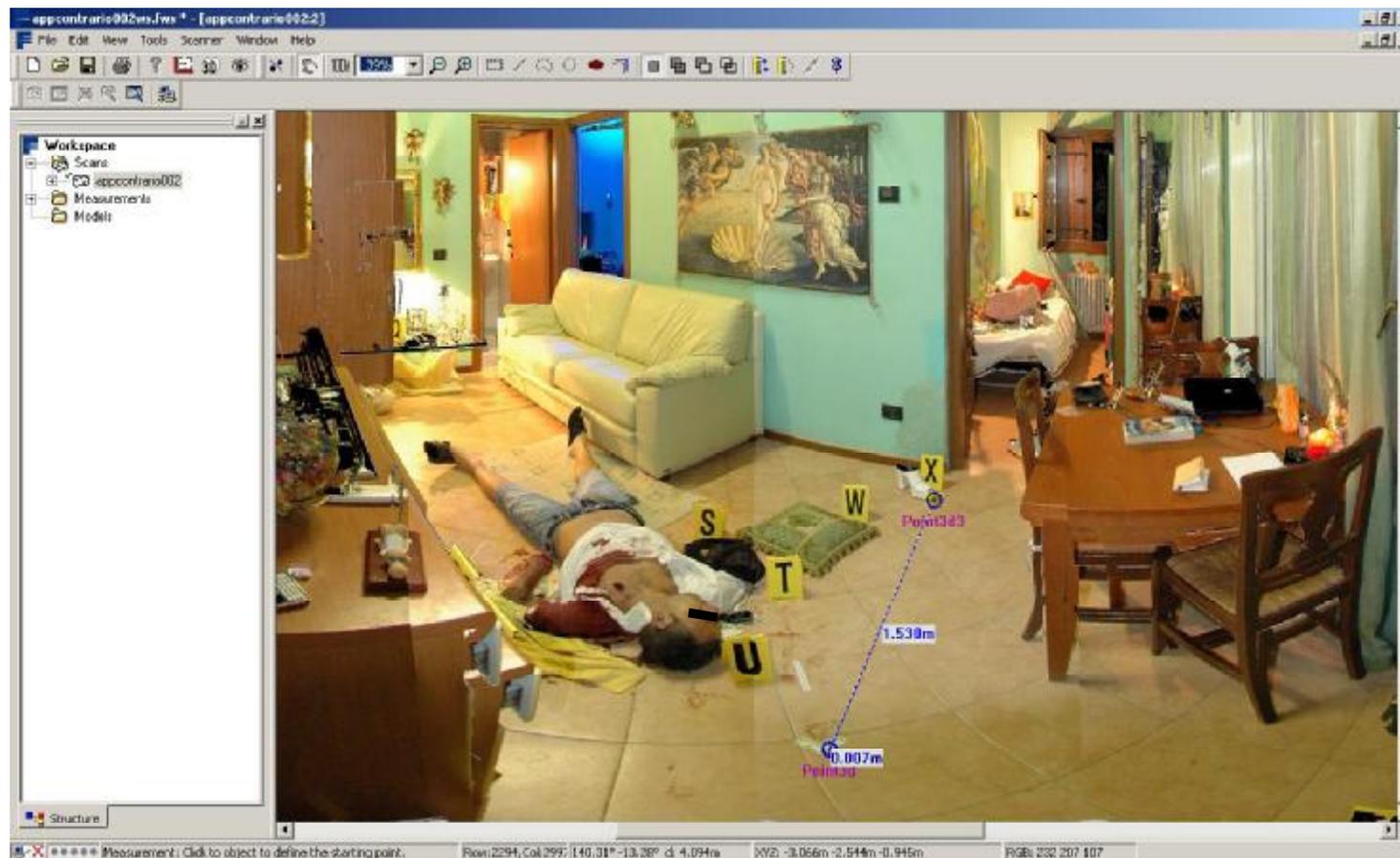
Key Benefits:

- Scanning may be done some time after an incident and still be combined with the first on-site documentation
- Complete recording of on-site conditions



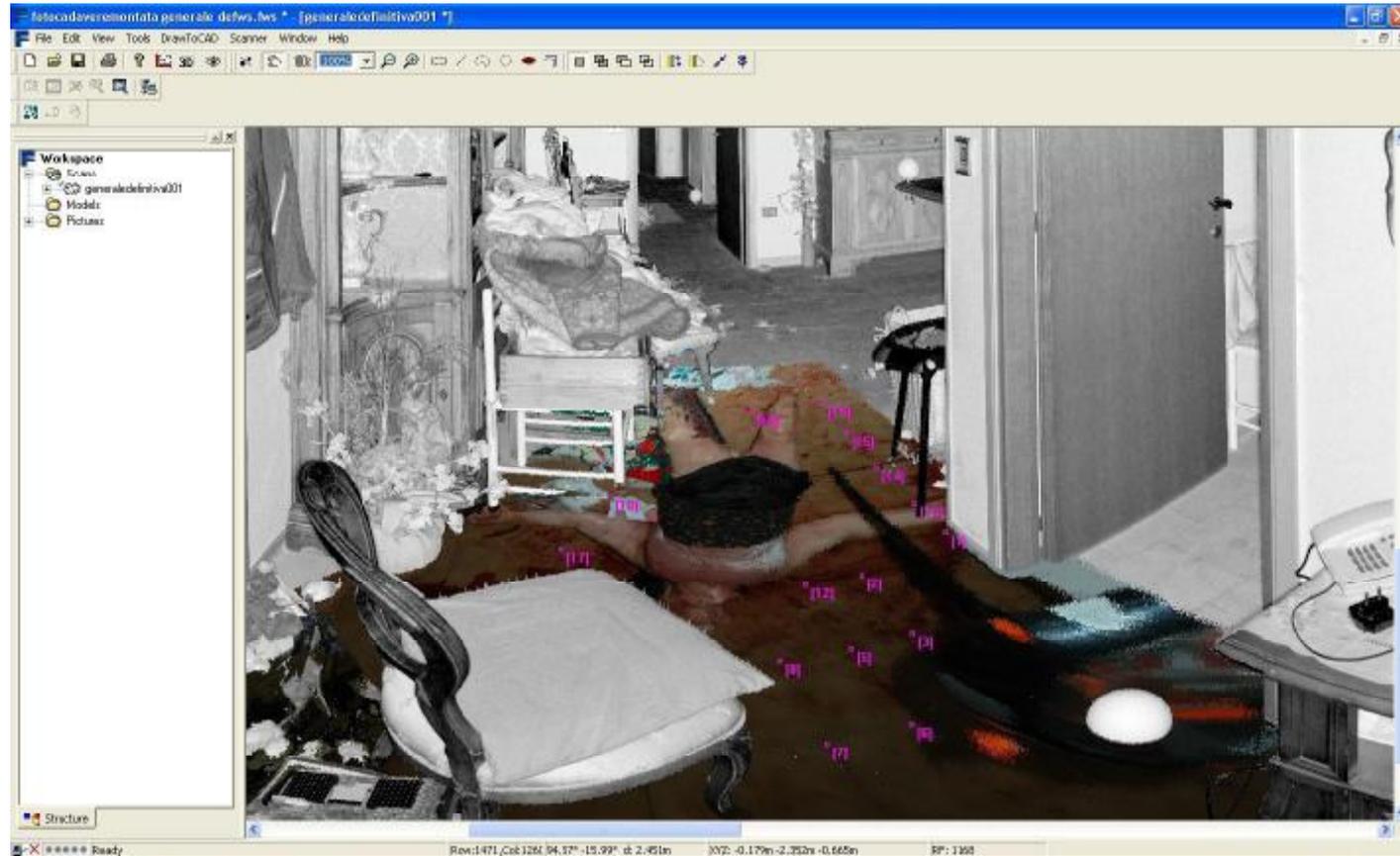
Murder of a Prostitute's Client

- Victim was killed by a prostitute who then robbed him
- Scanning in color took place with the body of the victim still in place
- Foot imprints and other traces were captured



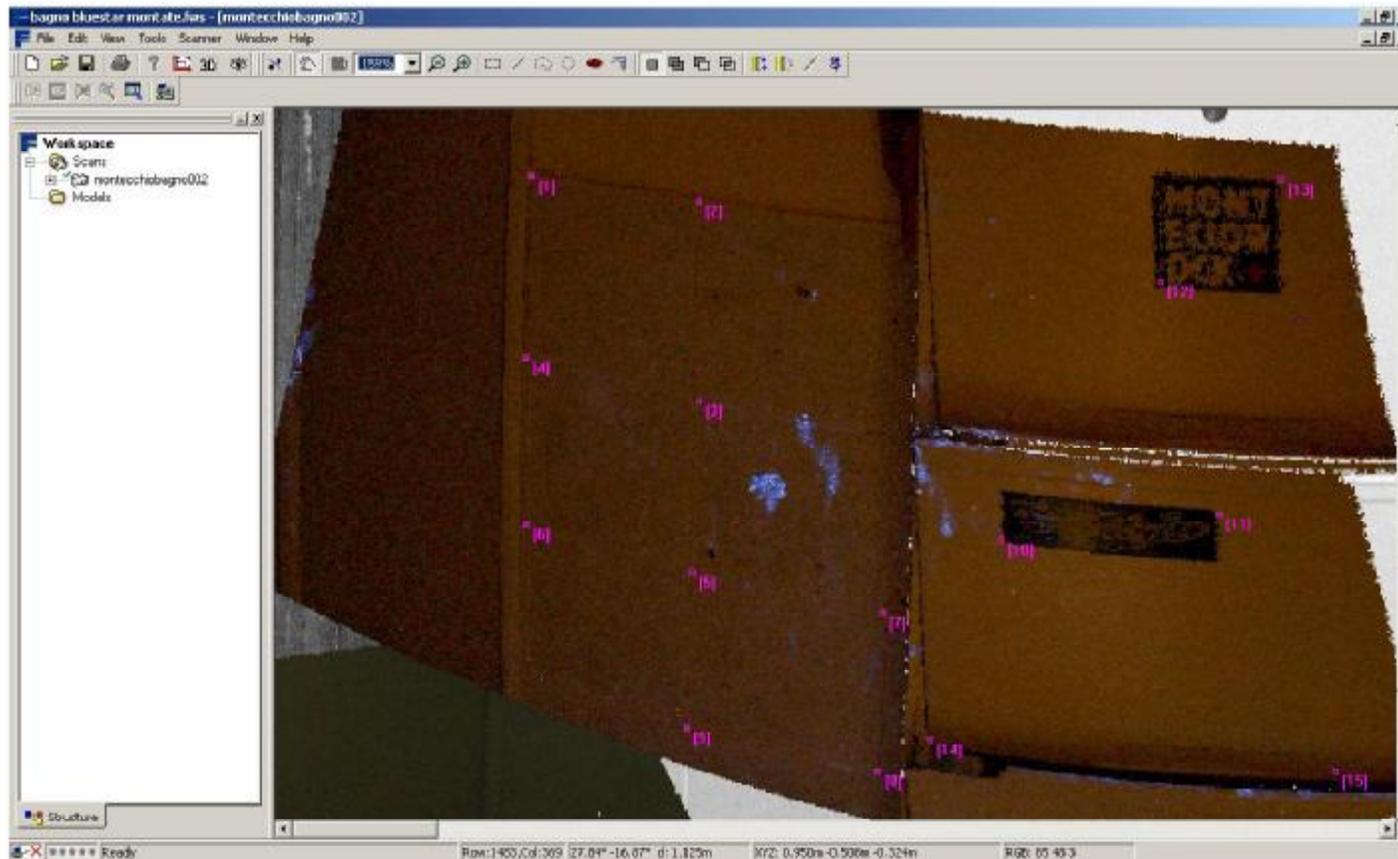
Murder of a Woman

- Woman was killed by another woman using a broken bottleneck
- Scanning took place some time after the Scientific Police secured traces
- Photographs of the first site visit were used to reconstruct the original position of the body and the furniture

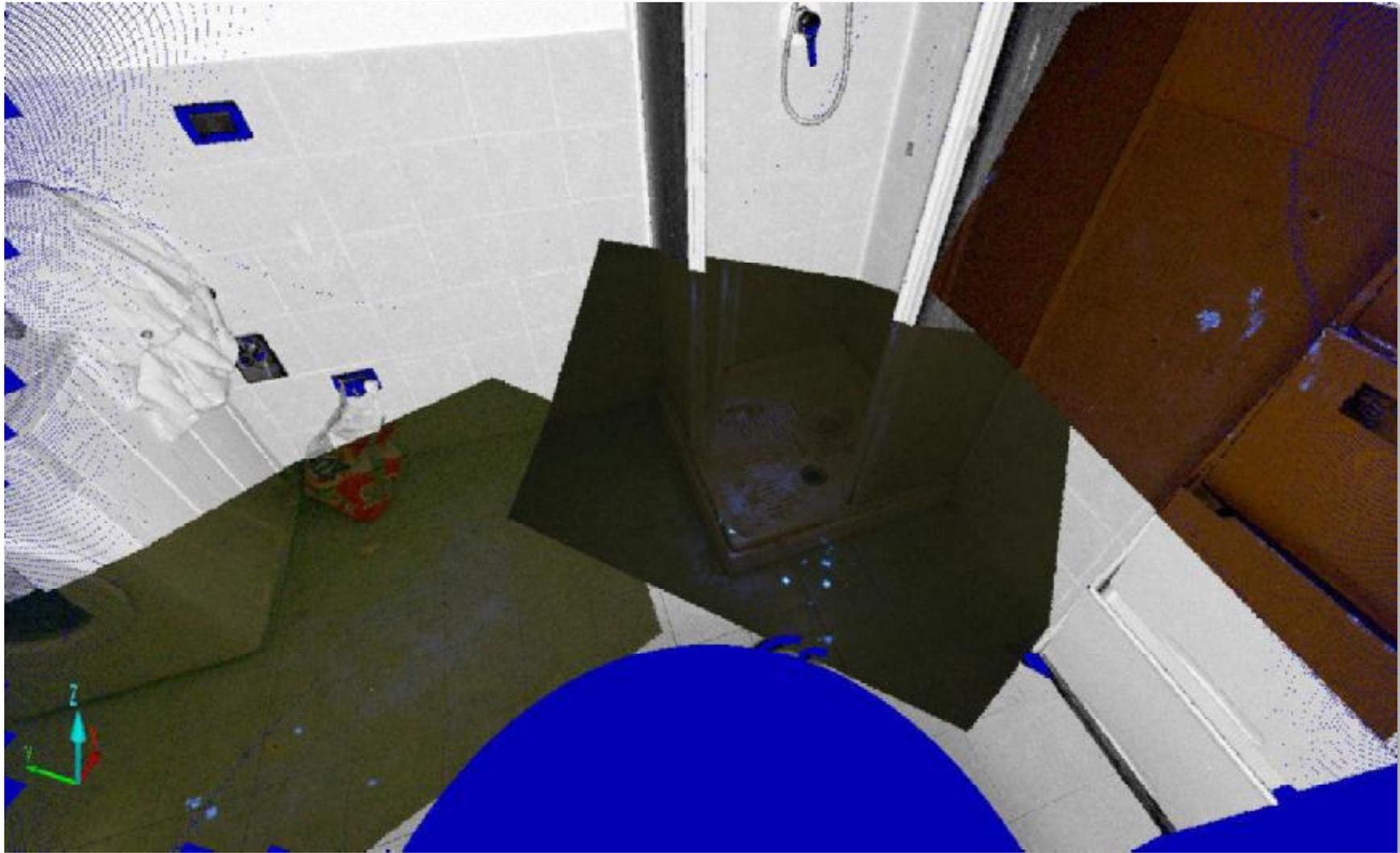


Affray in a Flat

- Man was beaten by 3 men in his flat
- The three supposed actors cleaned up the blood traces
- The suspects claimed the victim was already injured when returning home
- Photographs of BlueStar traces were combined with the 3D scans of the flat to reconstruct the crime

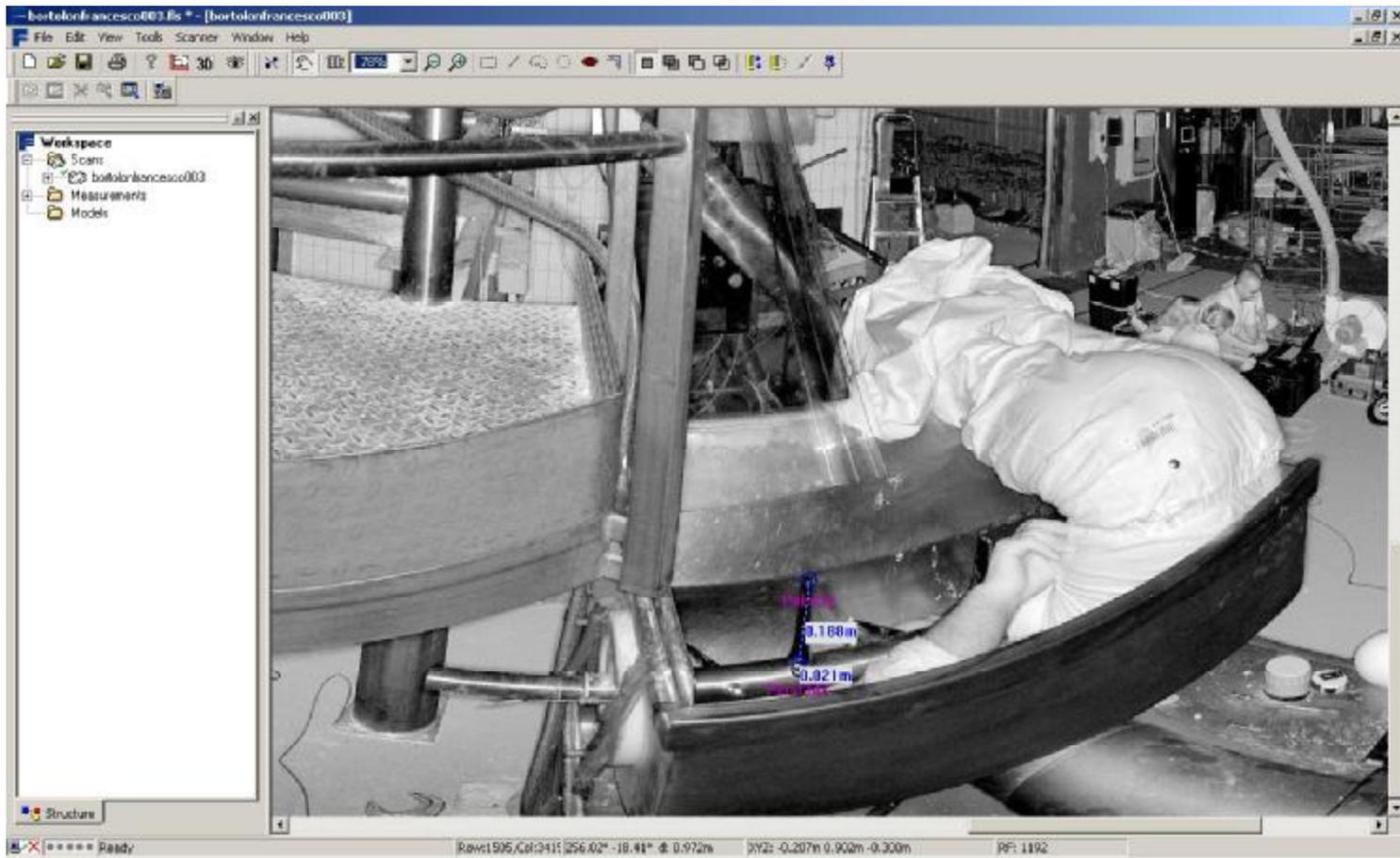


Homicide of a Man in his flat

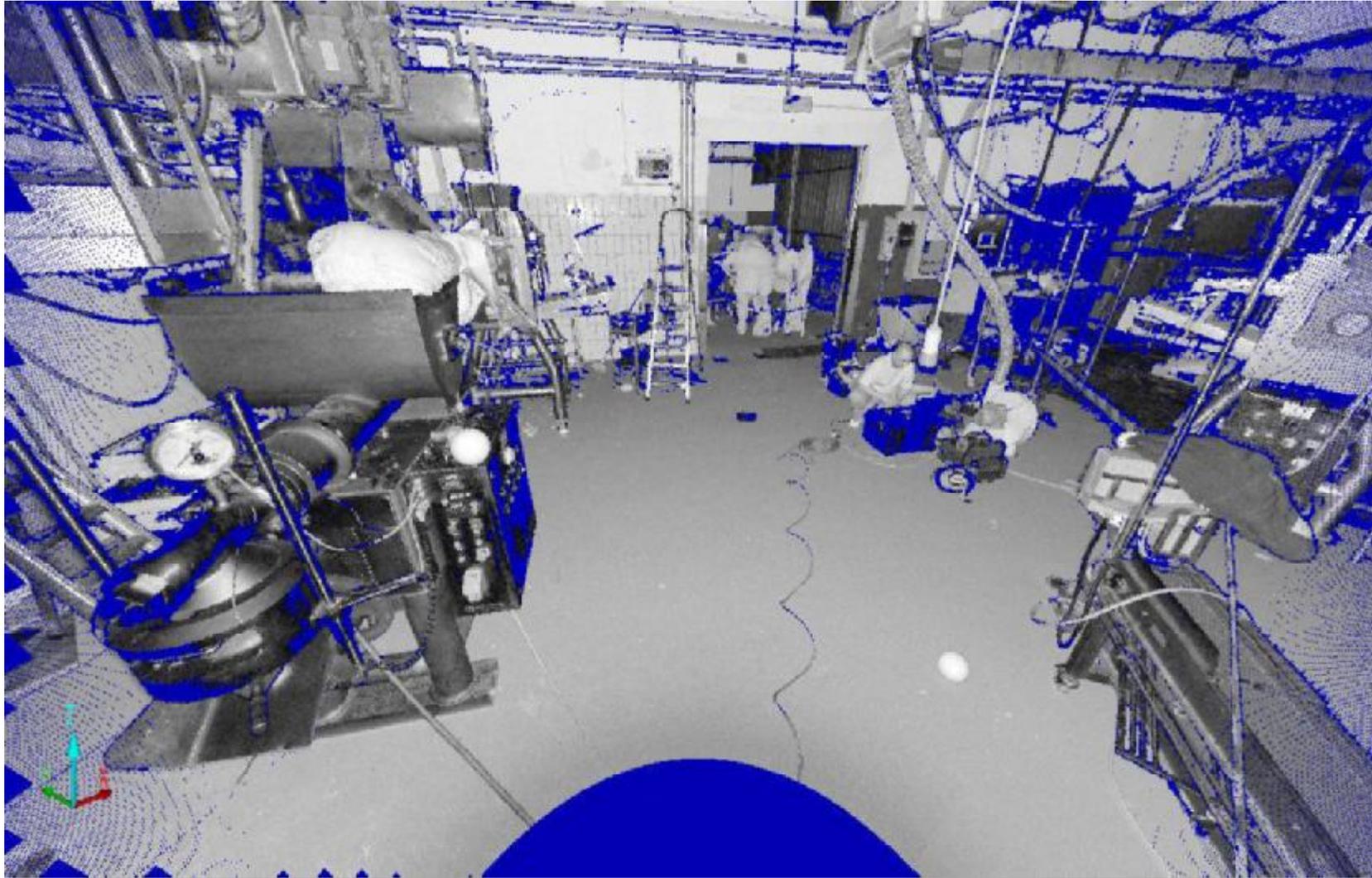


Accident at Work in a Pasta Plant

- Man torn into a mixing machine and killed
- This is a rare case of a documented accident at work which are normally not investigated further



Accident at Work in a Pasta Plant



Airplane disaster

- Acrobatic pilot had problems during a session
- His plane crashed into private home. Pilot died.
- The family was dining in a room at the opposite side of the building

