



PSNC

360 VR PRODUCTION

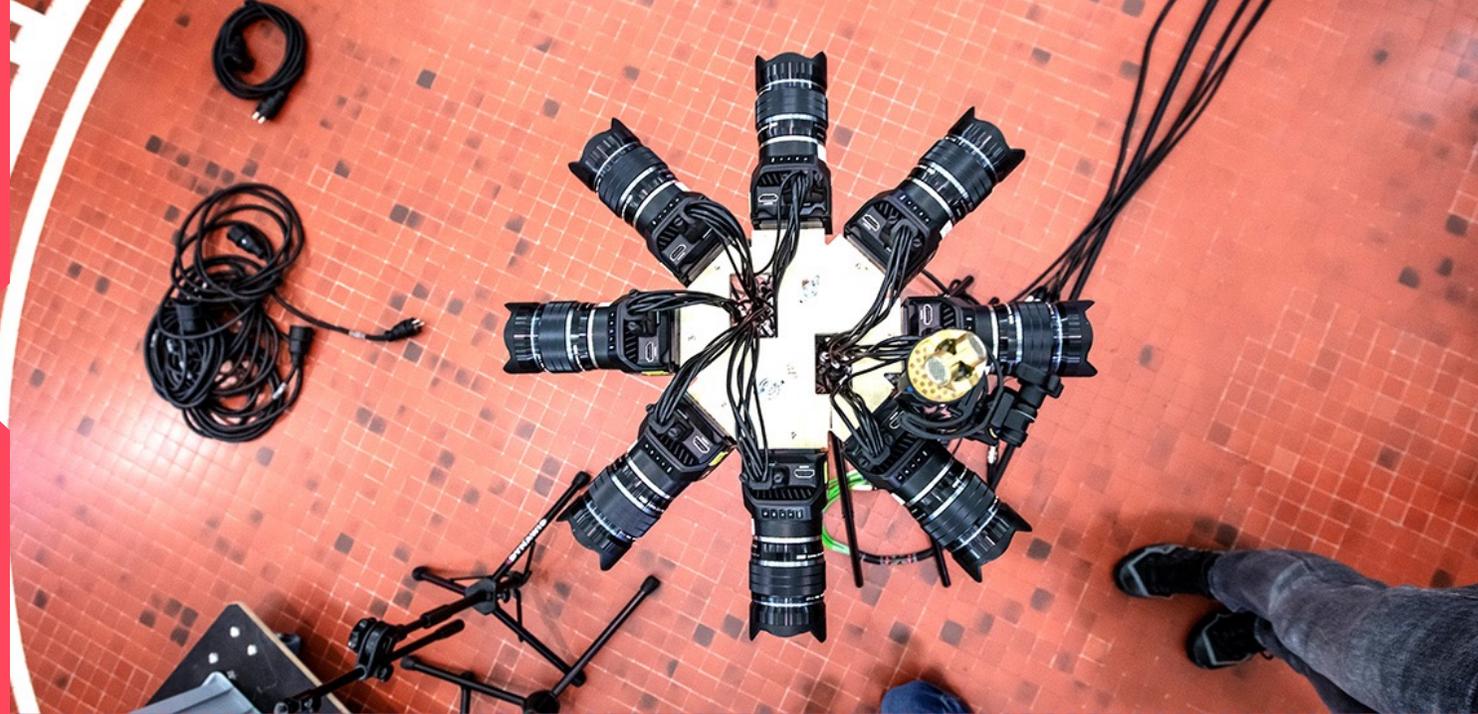
High resolution shooting tools:  
**360° video**

- Insta360 Pro camera
- 6x4K cameras stitched to 8K 360° video
- 8 camera RIG for Blackmagic Studio 4K mini
- Synchronized acquisition and image parameters
- High Quality external recording



# 360 VR RIG

- › 8x BlackMagic micro Studio 4K camera
- › UHD 30P each
- › All cameras fully synchronized
- › System possible to operate from battery power for field recordings
- › ProRes 4:4:4 recording for best quality
- › Stitched resolution up to 16K



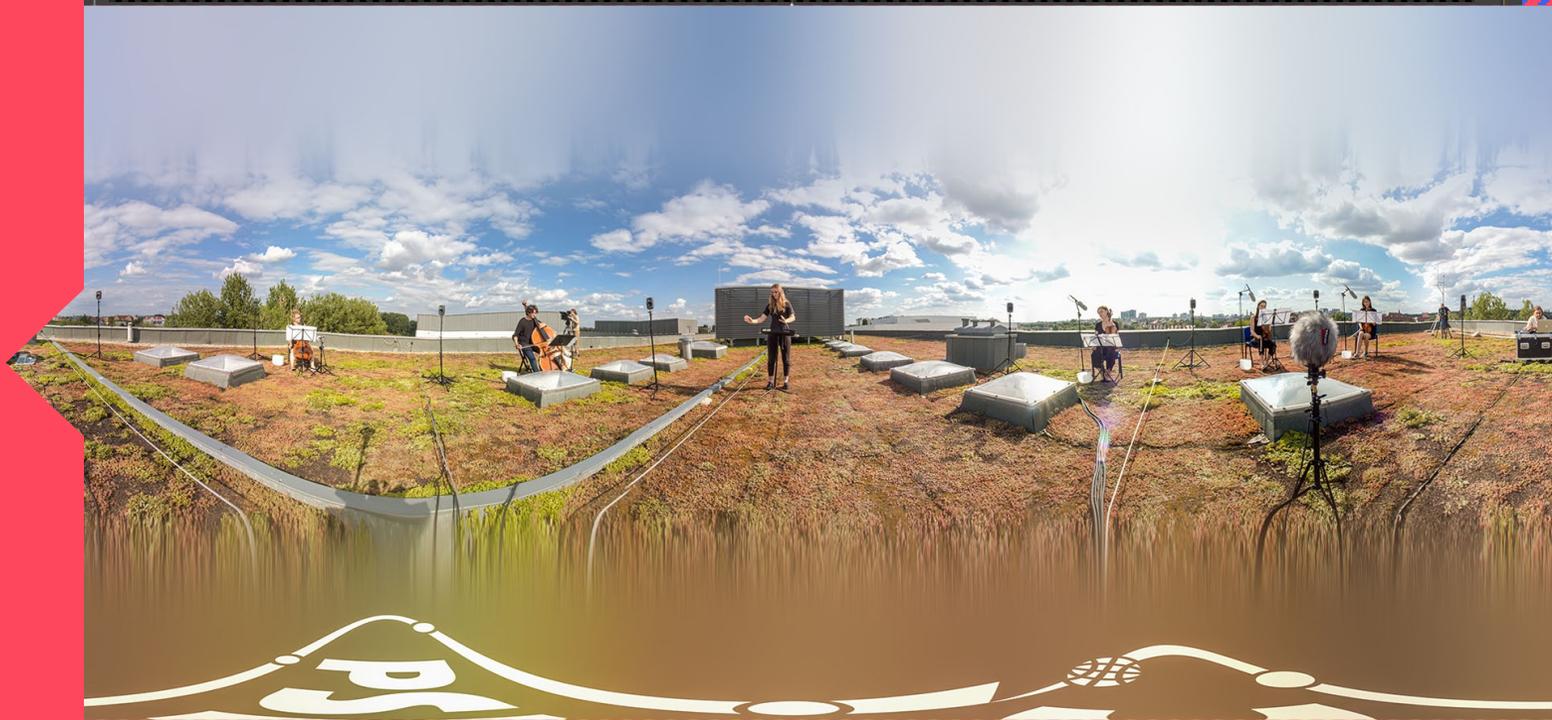
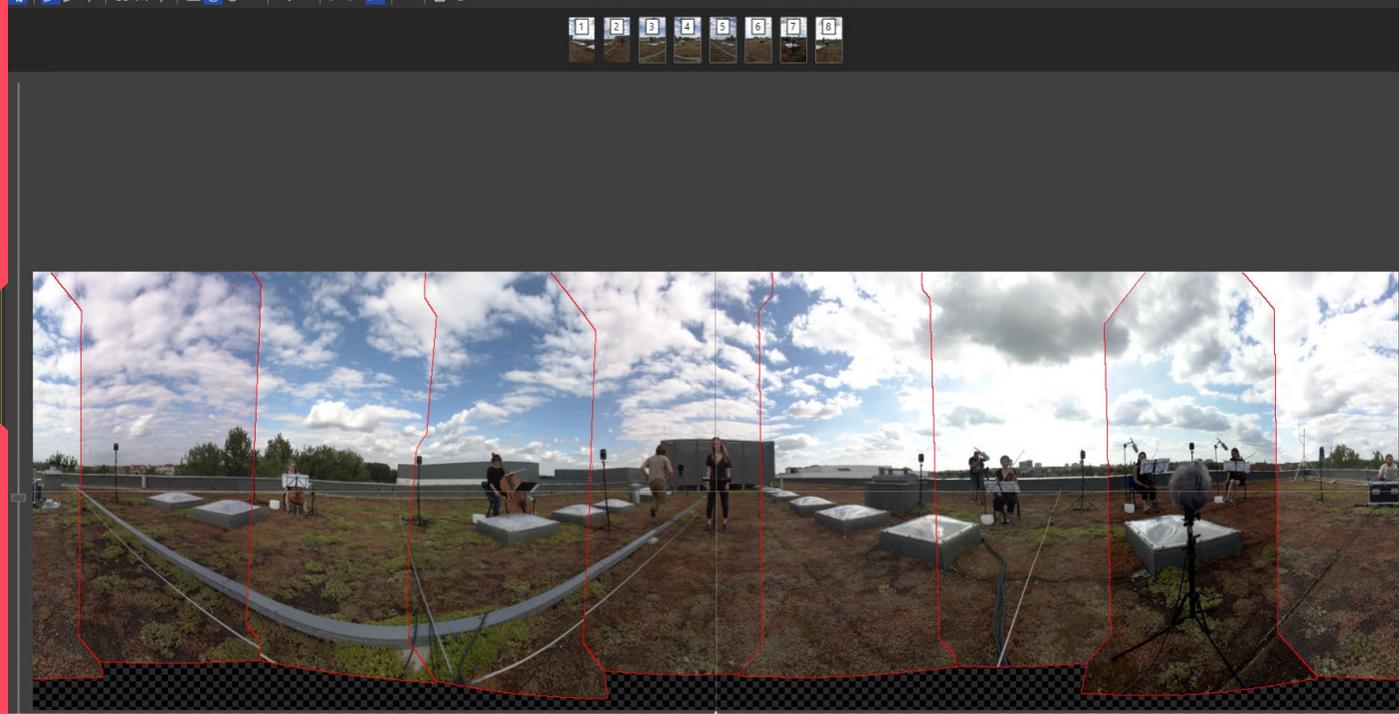
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# VR Roof concert „SzumiJanek”

- › 360 VR 16K resolution
- › 10bit HDR
- › Needed 20TB for source footage (33002 10bit TIFF frames)
- › All instruments separately recorded for ambisonic mix
- › Up to 7th order ambisonic sound render



# VR & Ambisonics „Krambabula“

- > 360 VR 16K resolution
- > All instruments separately recorded for ambisonic mix
- > Upgraded control for simultaneous record control
- > Better A/V Timecode synchronisation



# 8K 3D VIDEO & TIMELAPSE



# Workflow and production of immersive video content in UHD

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*Poznań Supercomputing and Networking Center*

## Subjects

- Explore different methods for producing beyond UHD-4K content
- Encode the immersive content using the HEVC encoder
- Find optimal configurations of the encoder for high-quality 8K delivery
- Prototype on new forms of interactive, non-linear storytelling
- Create new 360° content on different environments
- Establish best practice guidelines for media production workflows



# High resolution shooting tools: 8K and 8K 3D

- Modified SONY F65 camera
- SR Memory Recording
- Live Broadcast 8K output via 16x3G-SDI (BPU8000)
- Motorized Stereotec 3D Rig
- 16 channel Chrosziel LCS
- Synchronized lens drive



High resolution shooting tools:

# Timelapse Panorama

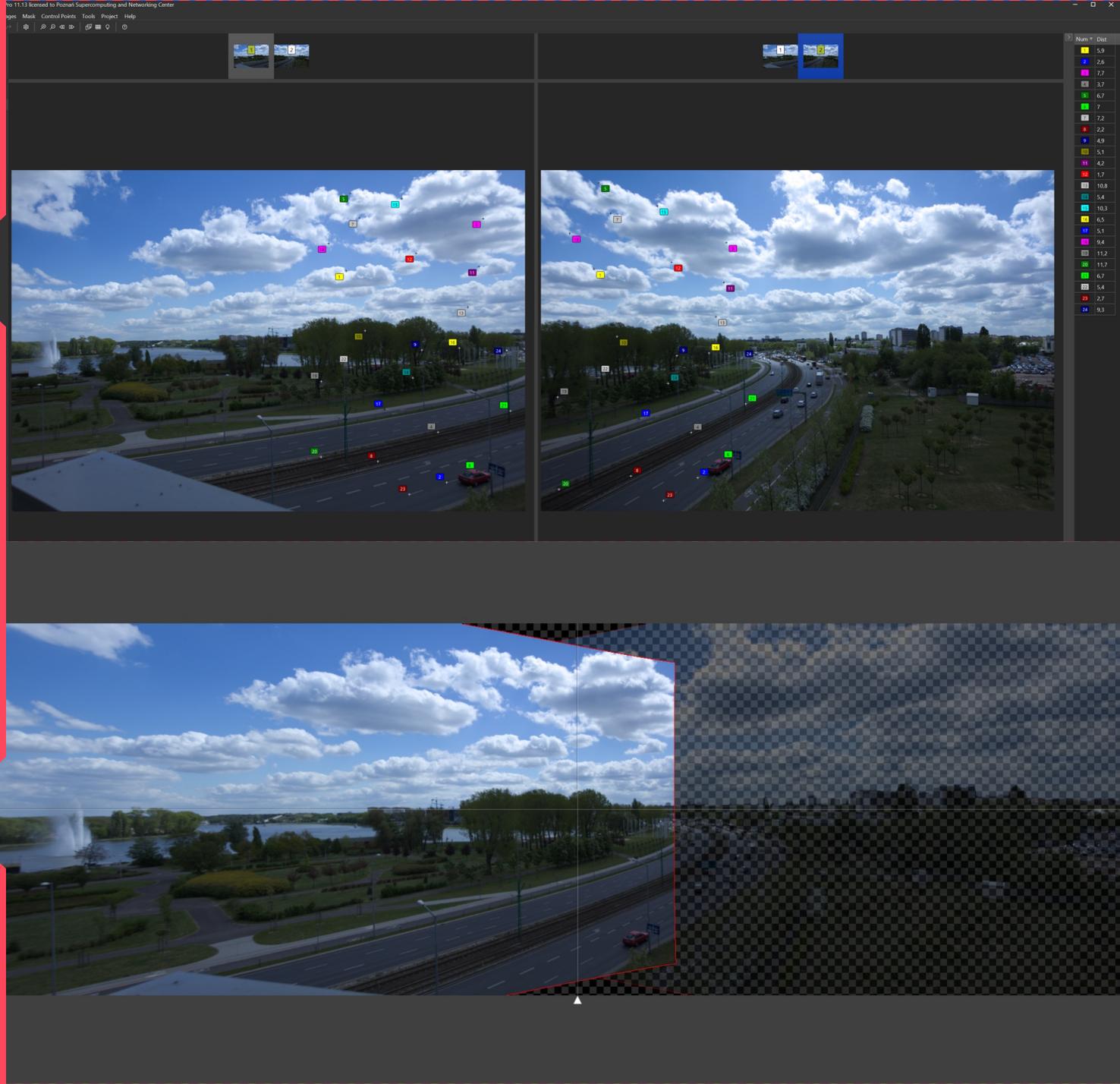
- 50Mpix Canon 5DS R
- Adjustable panorama rig
- Synchronized multicamera triggering system
- Precise motorized slider
- Precise Pan/Tilt camera head
- Perfect movement repetition
- Specialized control software



# 8K Tools

## Panorama stitching

- › Panorama content stitching using PTGui software
- › Designed to stitch simple panorama as well as 360° content
- › Support for HDR
- › Batch processing for movie production
- › Master export to any resolution (gigapan)



# 8K Content Cathedral 8K

- › Interactive movie production
- › Different technologies:
  - › 8K camera
  - › VR/360° camera
  - › Aerial movies (drone)
  - › Laser Scanning
- › Binaural, spatial and ambisonic audio
- › Software development
  - › Point Cloud (16K)
  - › Sync (VR/8K)
- › Interactive content in combination with ImmersiaTV software and SpinDigital player









16K POINT CLOUD

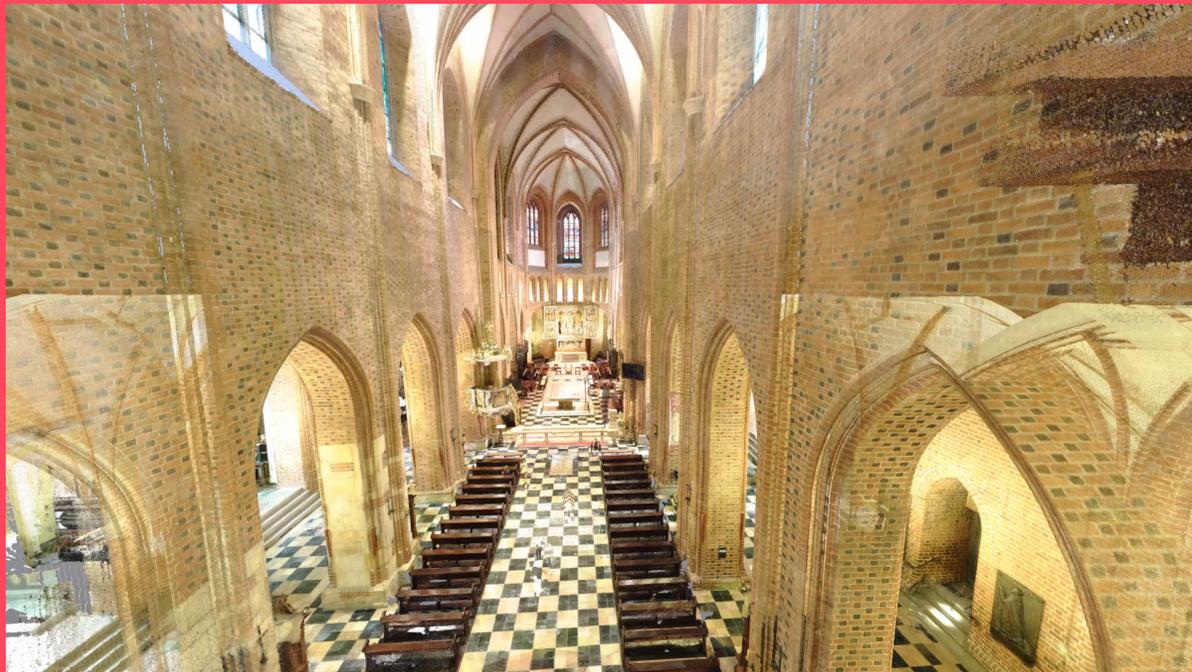
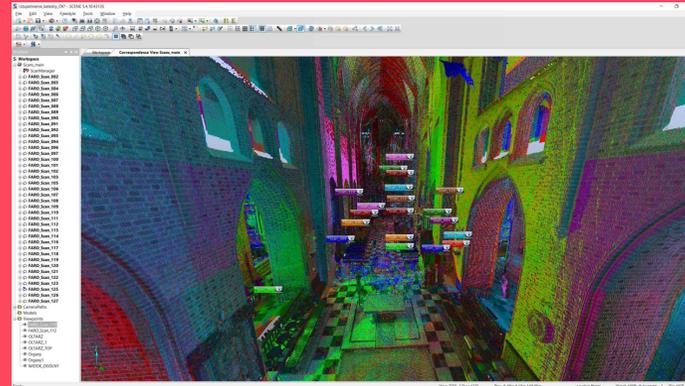
# Laser scanning and point cloud rendering in 8K and beyond

- Laser scanning using Faro 3D Scanner
  - 330m range
  - 0.2mm accuracy
- Rendering point cloud
  - 16K and above
  - 360° 16K
  - 3D for Deep Space and Norrköping Visualization Center
- CloudCompare development
  - Smooth camera path planning
  - 3D and 360° rendering
- 360° Cubemap workflow

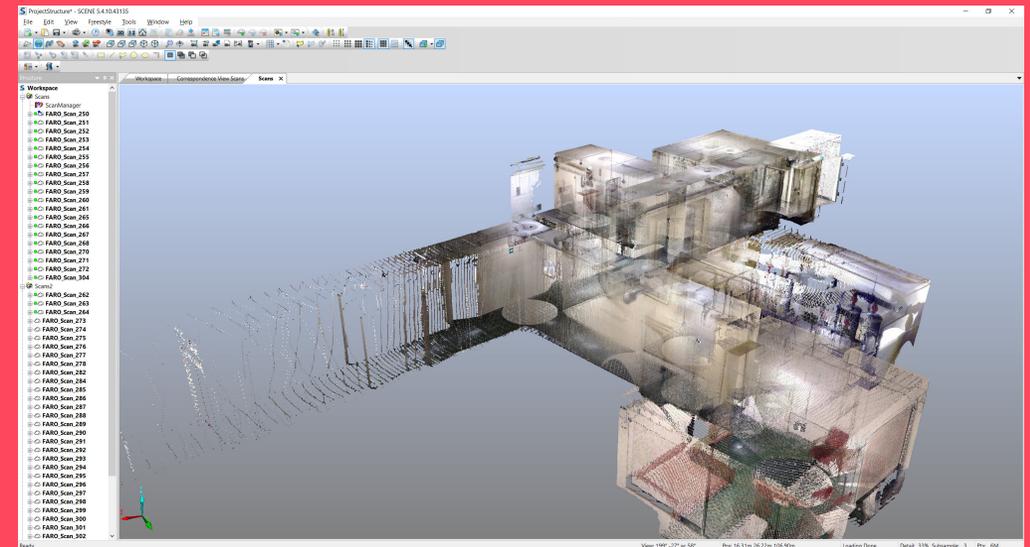
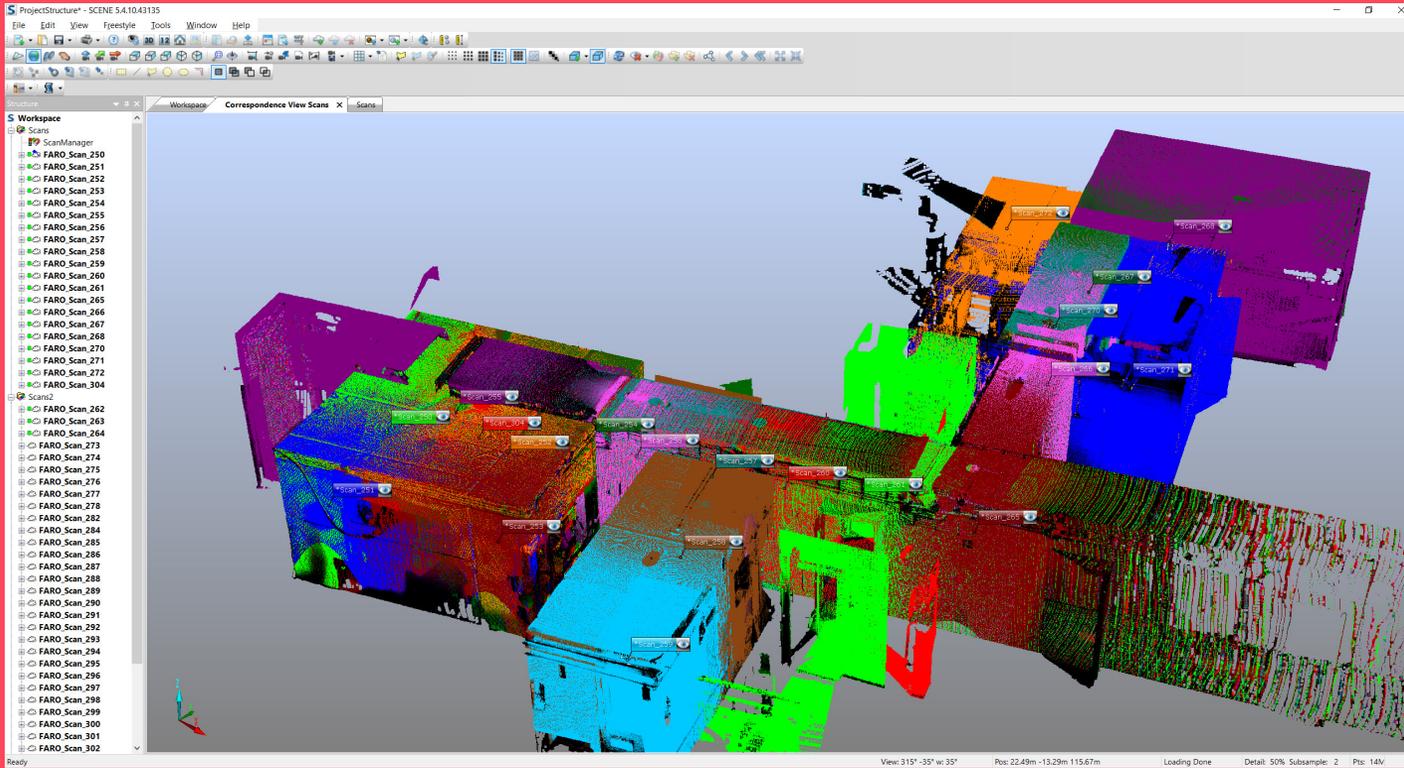


# Laser Scanning Cathedral Point Cloud

- › 42 scanner positions
- › More than 3 500 000 000 points

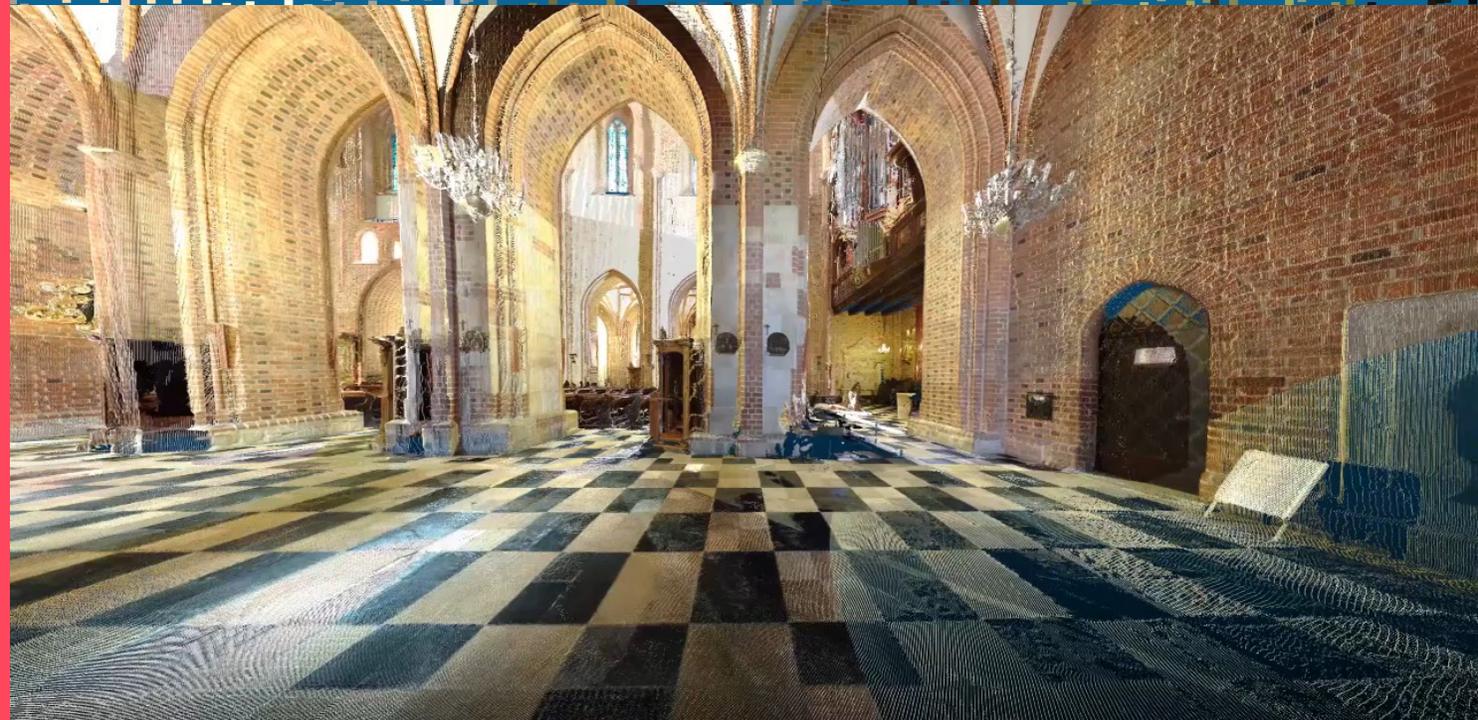
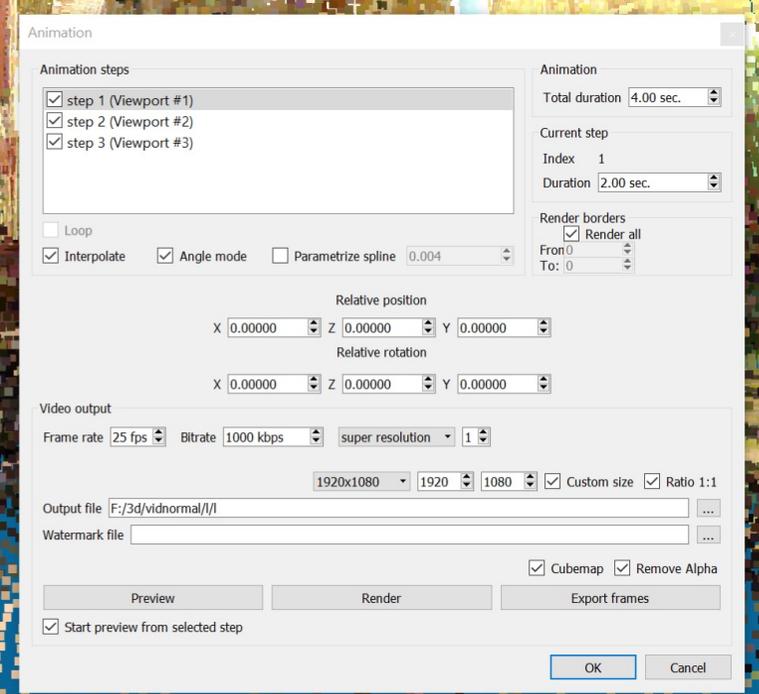
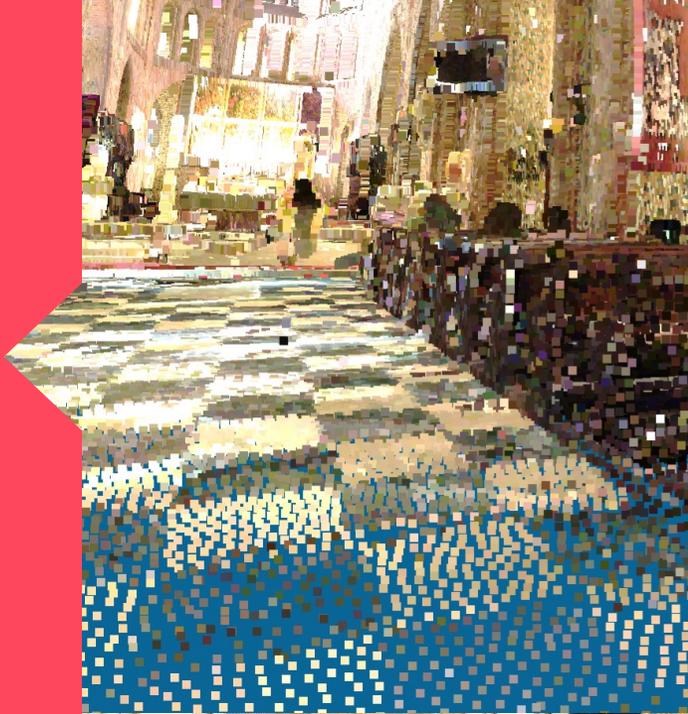


# Laser Scanning Atomic shelter Point Cloud



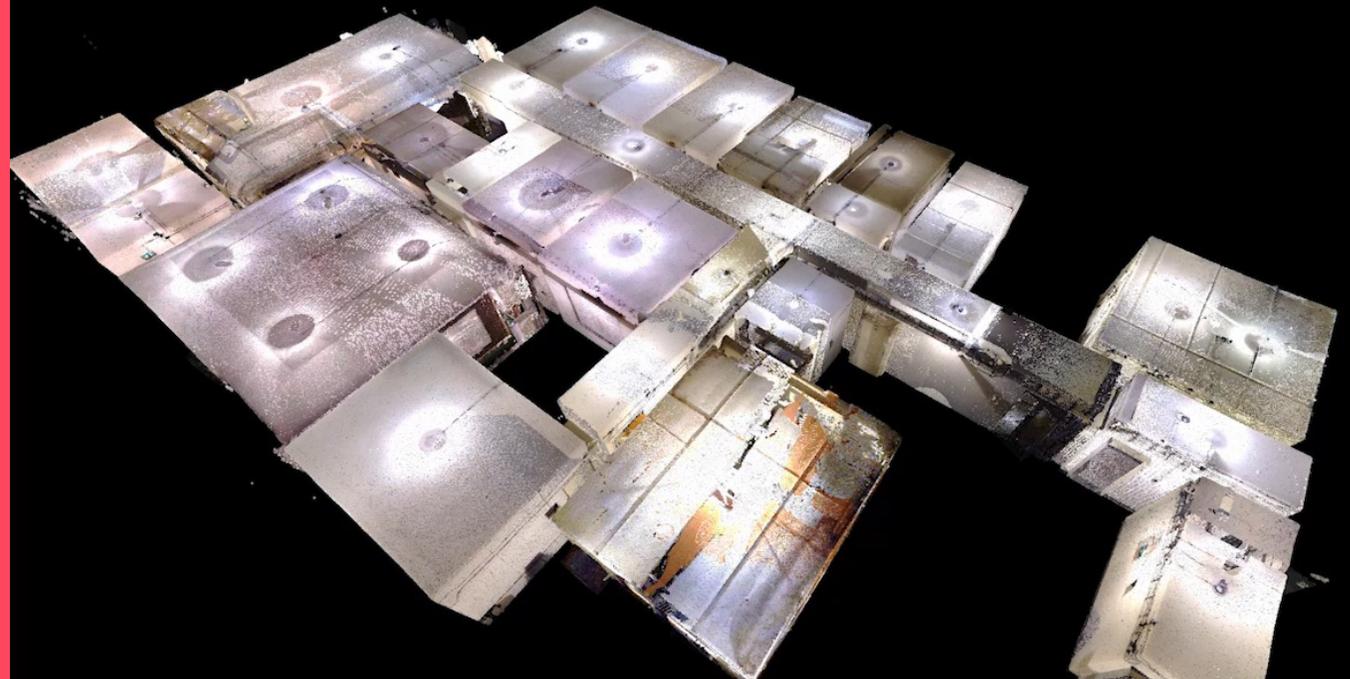
# Laser Scanning Software development

- CloudCompare plugin development
- Feature for smooth camera path planning
- Multiple keyframes
- Resolution independent
- 3D and 360° rendering, also cubemap ready



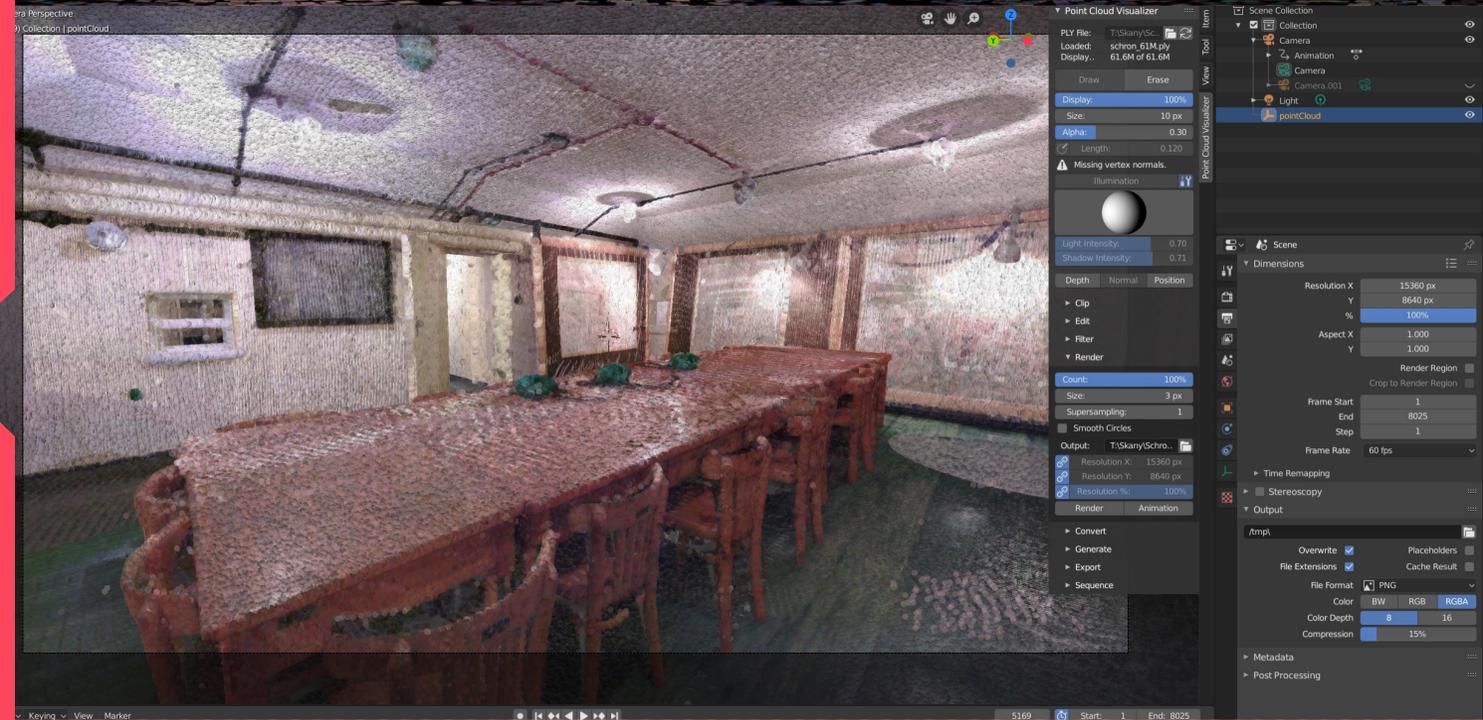
# Atomic Shelter Pointcloud scan

- Total of 146 000 000 points
- 55 different scan positions
- 8K 3D walkthrough render
- VR 360 render in progress
- Blender engine for pointcloud triangulation/mesh generation
- Future mesh integration with game engine (for example Unity)



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# 8K LIVE PRODUCTION



# SPECIAL SHOOTINGS





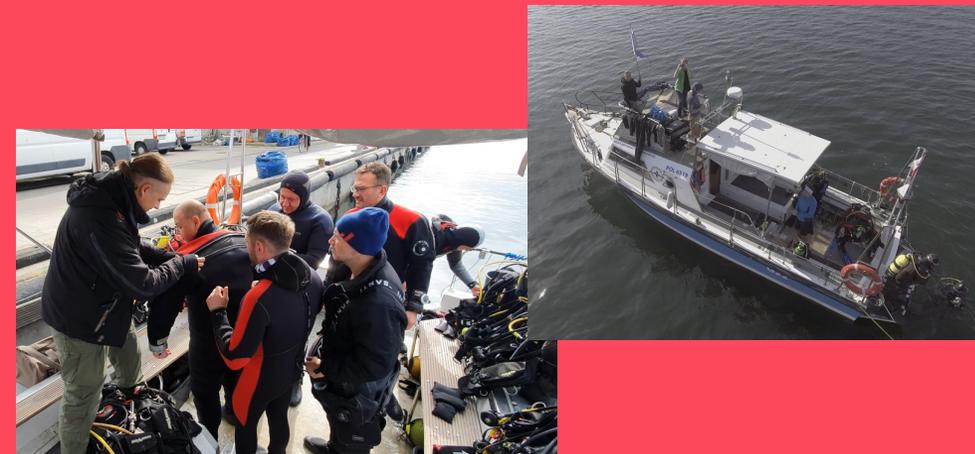
# Underwater enclosure

- › Rouge Amphibico
- › Remote Focus and Iris
- › Full camera control – waterproof joysticks
- › Live SDI output
- › Various lens support
- › Flexible weight configuration for buoyancy compensation



# Underwater 6K footage „Hel“

- Up to 38m deep diving
- RED Dragon camera in special waterproof enclosure
- Remote Focus and camera control
- Underwater xenon lights



# Super Slow Motion setup

- 2x Phantom Flex 4K camera
- Cinema lens PL mount
- Up to 1000fps in full 4K
- Over 2500fps in HD
- Stereotec 3D RIG with 11 motorised axis
- Over 20kW of flicker-free cinema xenon lamps



# High Framerate Content

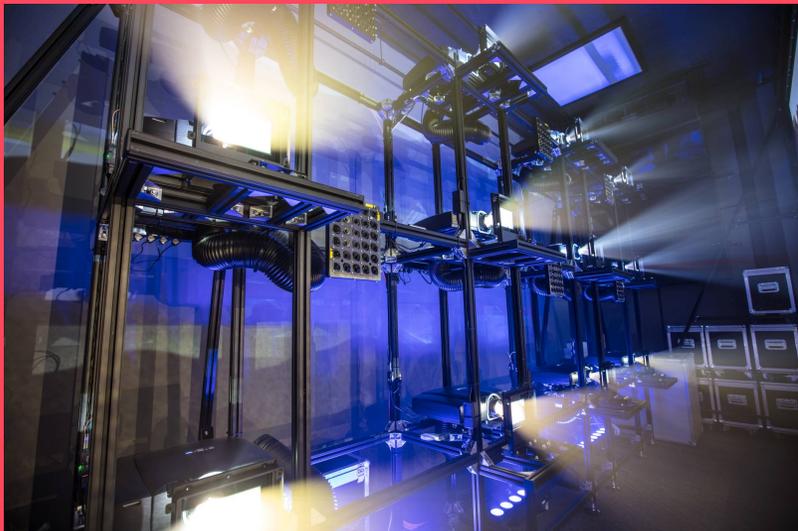
- 4K 120fps output
- Shoot on Phantom Flex 4K at 1000fps
- Workshop and city views in 2D
- Liquid nitrogen frozen elements destroying in 3D



# 8K Tools Showroom

- Full resolution 8K screening
- 2D-60fps / 3D-120fps projection
- Rear projection using 12 blended Barco F50 WQXGA projectors
- Image processing using Barco E2 and MCM-400
- Custom made 8K 3D playout system
- Can handle any signal
- 7.1 14kW sound system





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# 8K Tools Ambisonic Audio

- › 24.1 speakers constellation
- › Dante Audio infrastructure
- › Live audio processing
- › Independent ambisonic mix tested up to 7th order
- › Total of 52 speakers and 50 microphones available

Computer with Reaper

Focusrite rednet 3

4x Behringer ada 8200

24x genelec 8010a  
1x genelec 7350 sub



Dante protocol

4x ADAT

Up to 32 physical outputs

