



## 2<sup>nd</sup> EuroSDR Workshop

*High Density Image Matching for DSM Computation*

# Motivation for a Dense Image Matching Workshop for Software Providers

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**ULTRACAM**  
MODULE EAGLE  
E-1- 60811187  
K, 35A  
FOR PRECAUTIONS  
FOR PATENT INFORMATION

**ULTRACAM**  
MODULE EAGLE  
E-1- 80810137  
K, 35A  
FOR PRECAUTIONS  
FOR PATENT INFORMATION

**CAM**

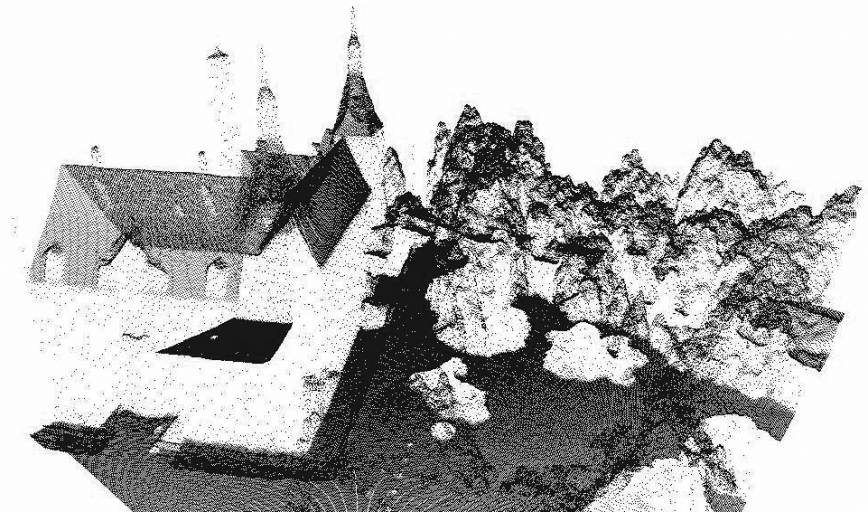
**ULTRACAM**  
FALCON

Microsoft

Promotion of the technology  
showcase of the image based solution

Value added Image data (from pixel to information)

Number of Images versus Redundancy,  
Quality, Automation etc.  
Manual labor vs. Automation

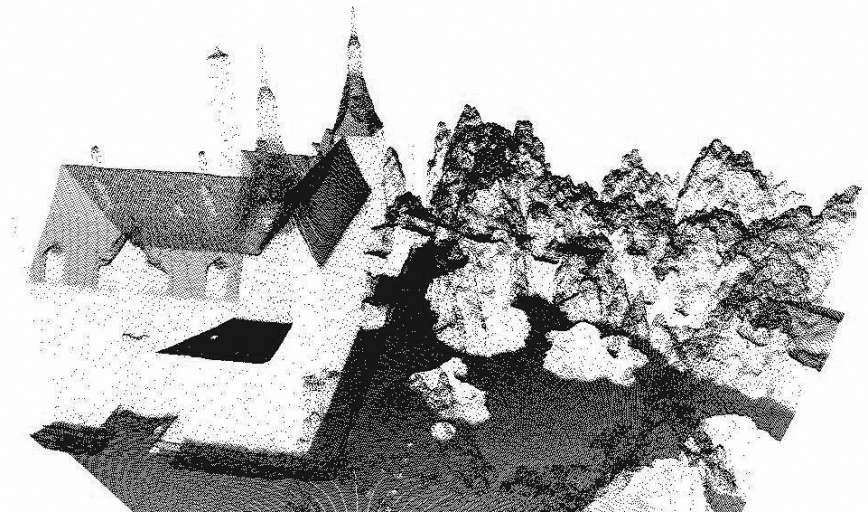


# Multi-Ray Photogrammetry

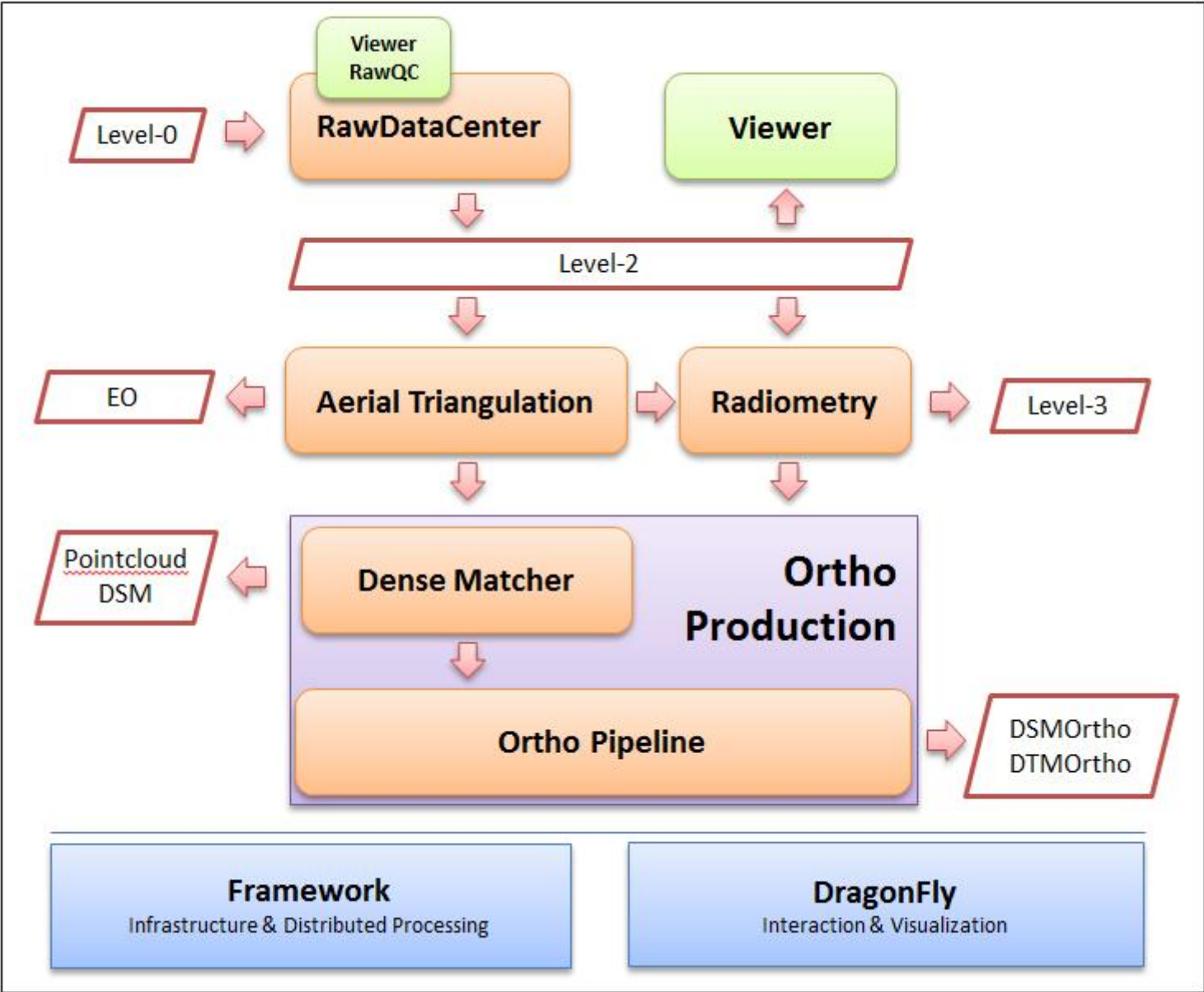
- Set of high resolution images
- 80% forward overlap
- 60% sideward overlap
- Up to 15 rays per point



Camera manufacturer -> how to add value to the  
Camera  
Supporting the Portfolio of Photogrammetry

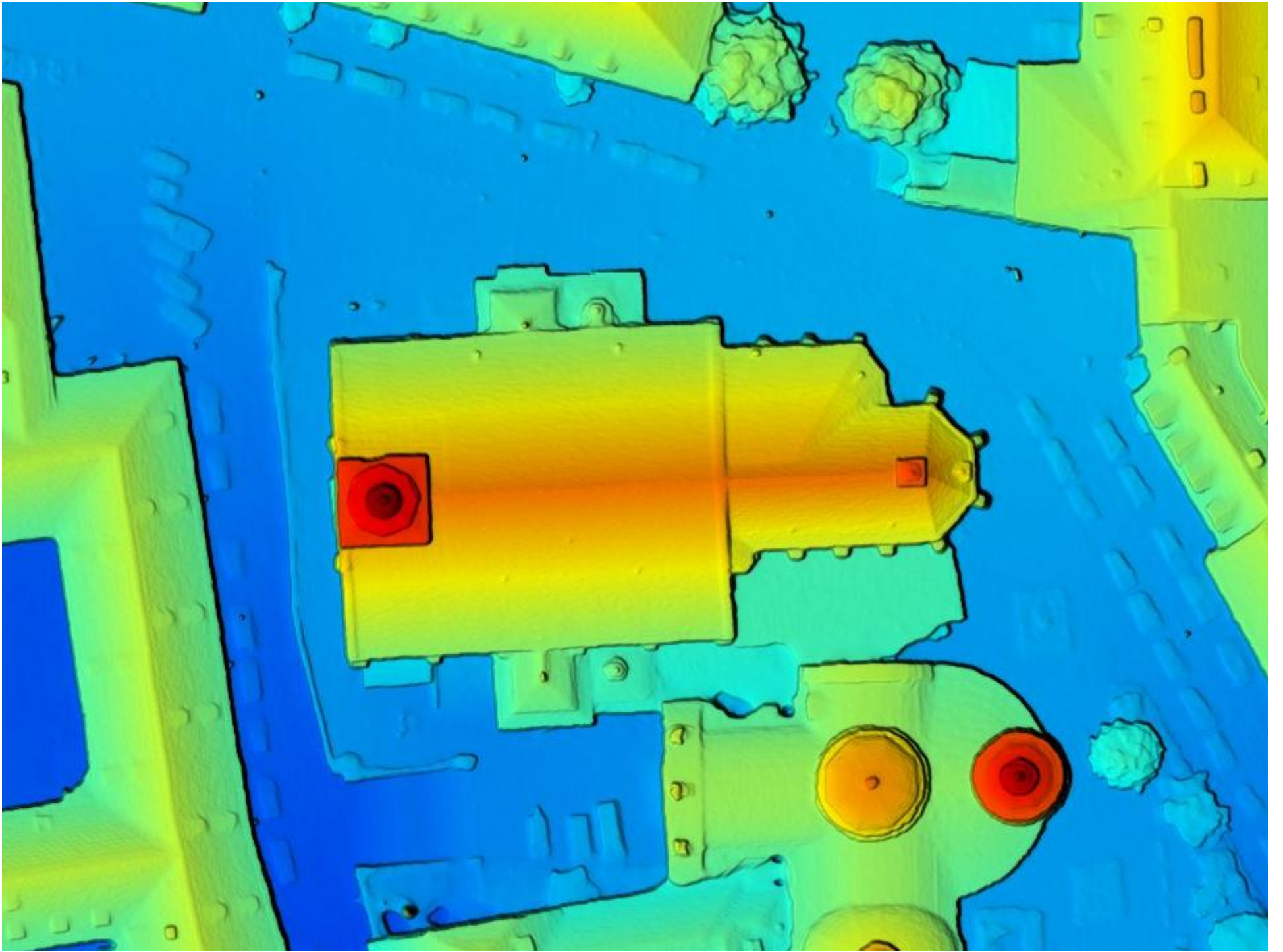


# UltraMap Workflow



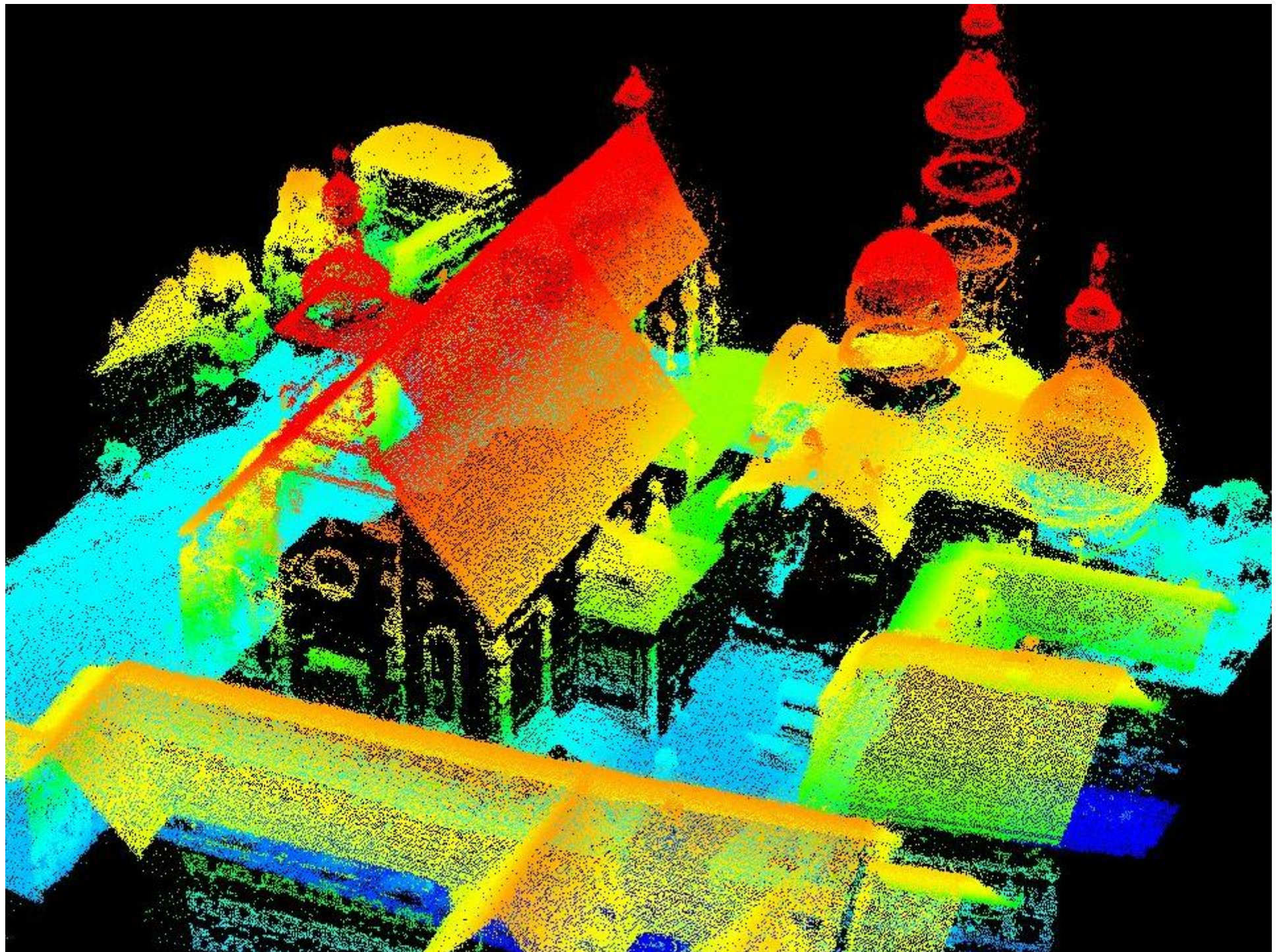
# Dense Matching

- Highly redundant data set
- Pixel based matching between image pairs
- Result: point cloud
  - Pixel location = x, y value
  - Dense matcher = z values per pixel
  - Point density  $\gg 100$  points per square meter







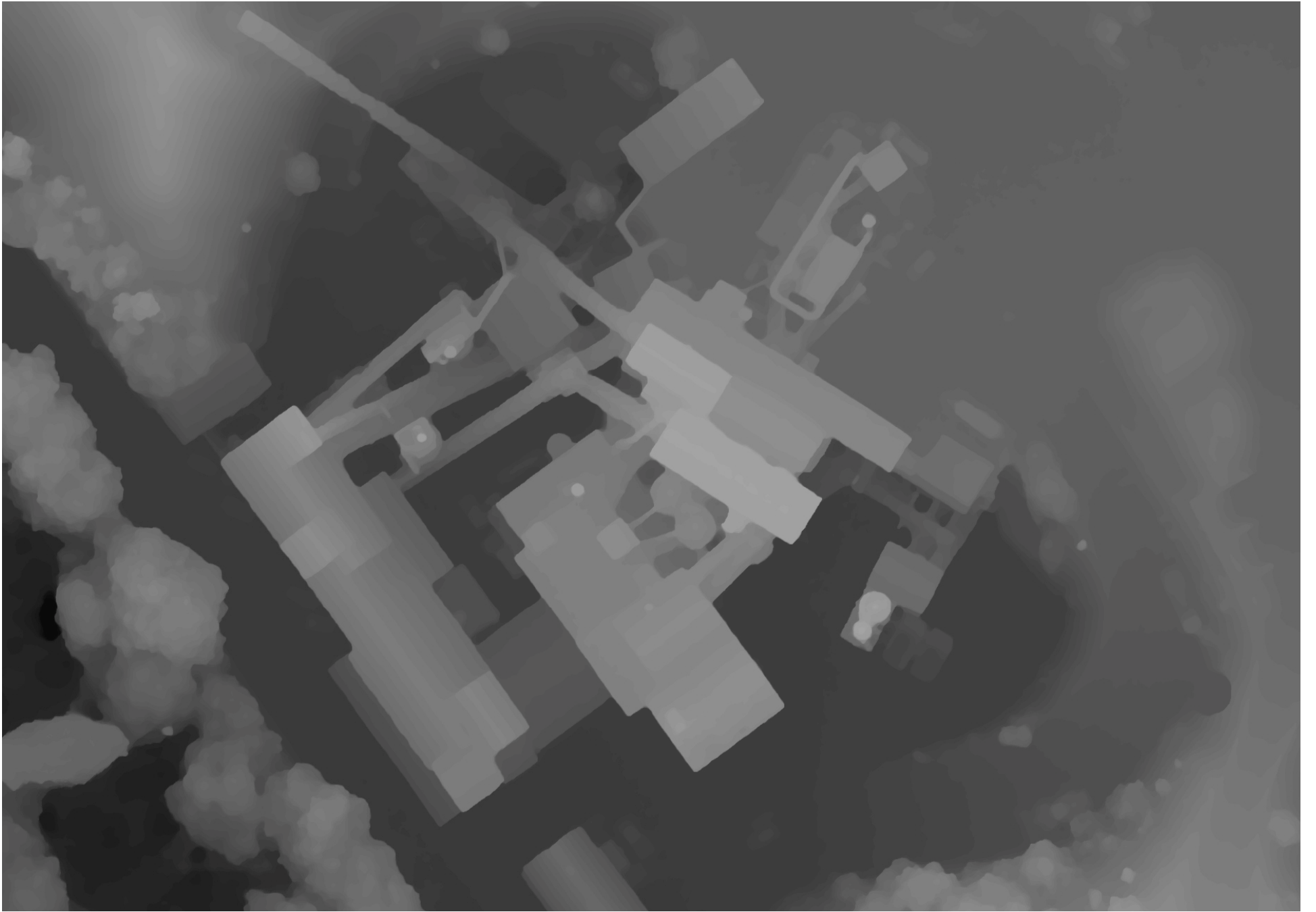


Qualified Feedback  
Competitive Comparison  
Photogrammetry vs. LIDAR

EuroSDR Testcase









UltraMap V3.0 DSM Ortho

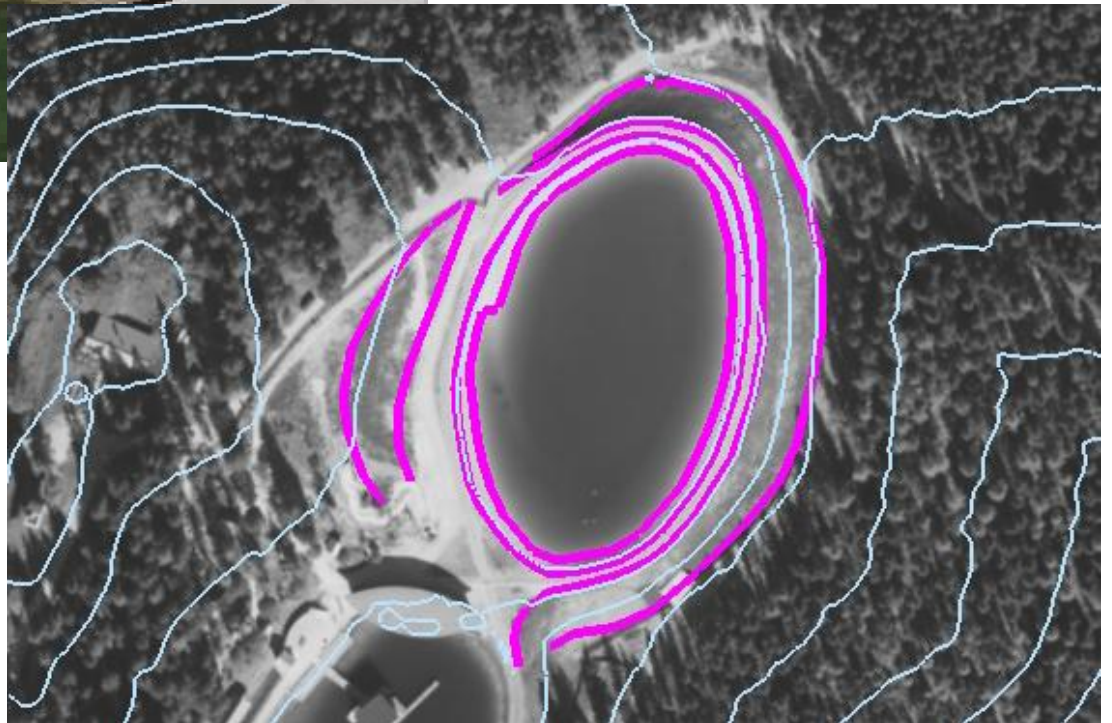


UltraMap V3.0 DSM Ortho



LIDAR based DSM caused problems due to changes

UltraMap V3.0 DSM Ortho was correct (DSM from Images)







Thank you ...