

**ULTRACAM**

# The Evolution of Microsoft / Vexcel's Camera and Software Technology

**53<sup>rd</sup> Photogrammetric Week**  
**Stuttgart, Sept/6, 2011**

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**Microsoft**

## The UltraCam Family 2003 - 2010

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**UltraCam D**  
**2003**

**UltraCam X**  
**2006**

**UltraCamXp**  
**2008**

**UltraCam Xp WA**  
**2009**

**UltraCam Lp**  
**2010**

**Microsoft**

# Evolution of UltraCam

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86 Mpix



UltraCam D  
2003

136 MPix



UltraCam X  
2006

196 Mpix



UltraCam Xp (Xpwa)  
2008/2009

**Highest  
Productivity  
Best Image  
Quality  
State of the Art  
Components  
Software  
leveraged  
Hardware**

**Microsoft®**

## UltraCam Lp

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**Microsoft®**

# UltraCam Lp

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- 90 MegaPixel Mapping Camera
- Focal length 70mm
- Image format: 7920 x 11704Pixel
- Compact design (integrated DU)
- 2 separated PAN cones
- RGB + NIR (PS ratio: 1:2)



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## Monolithic Stitching Innovative Technology

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**Technology Innovation in  
Photogrammetry Award  
Geospatial World Forum  
Conference 2011  
(Hyderabad, Indien)**



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UCLp  
90

UCX  
136

UCXp  
196

Eagle  
260 MByte

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A photograph of the UltraCam Eagle system setup. It includes a silver camera unit with 'ULTRACAM EAGLE' and 'Microsoft' logos, a CRT monitor, a keyboard, and a mouse. The setup is on a white surface against a light background.

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**UltraCam  
Eagle**

**20010 \*  
13080 Pixel**

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# Vexcel's Contribution to

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**Airborne Image Data Collection**

**UltraCam**

**3-D object reconstruction  
Models**

**City**

**Microsoft**

## 3D-Urban Model

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**Graz/Austria**

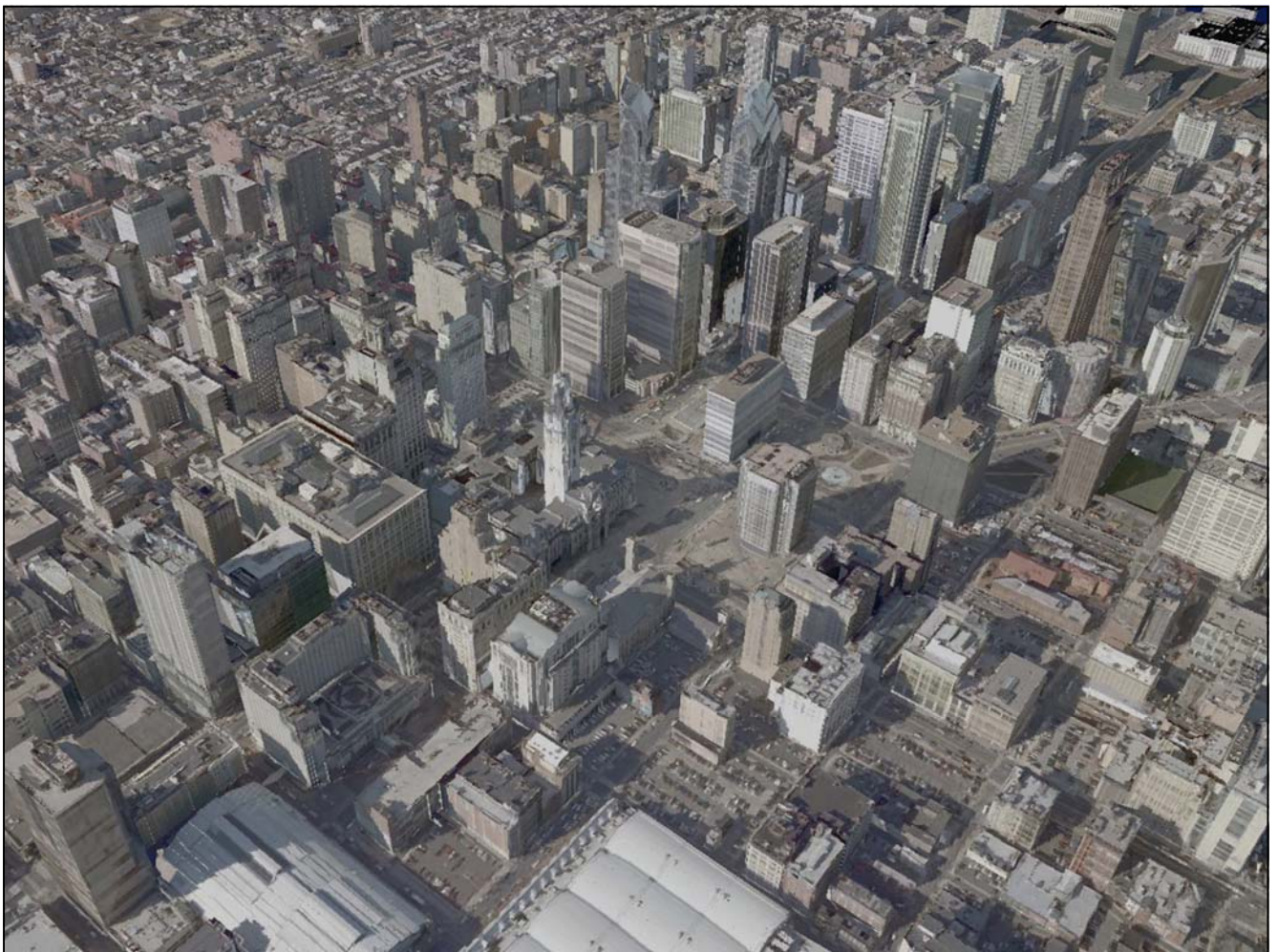
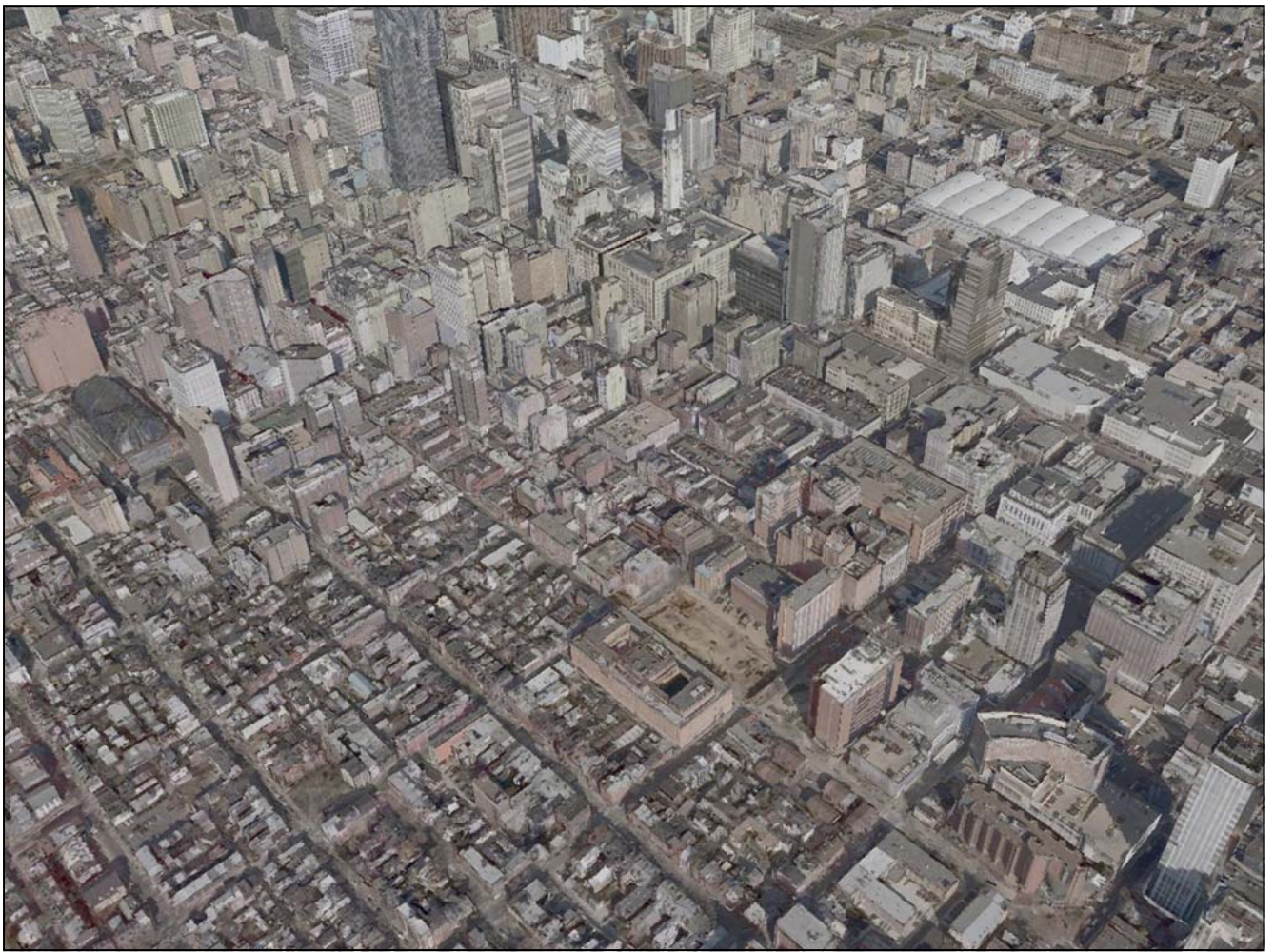
**3D city model  
automatically  
computed from  
UltraCam  
images**

**Microsoft**







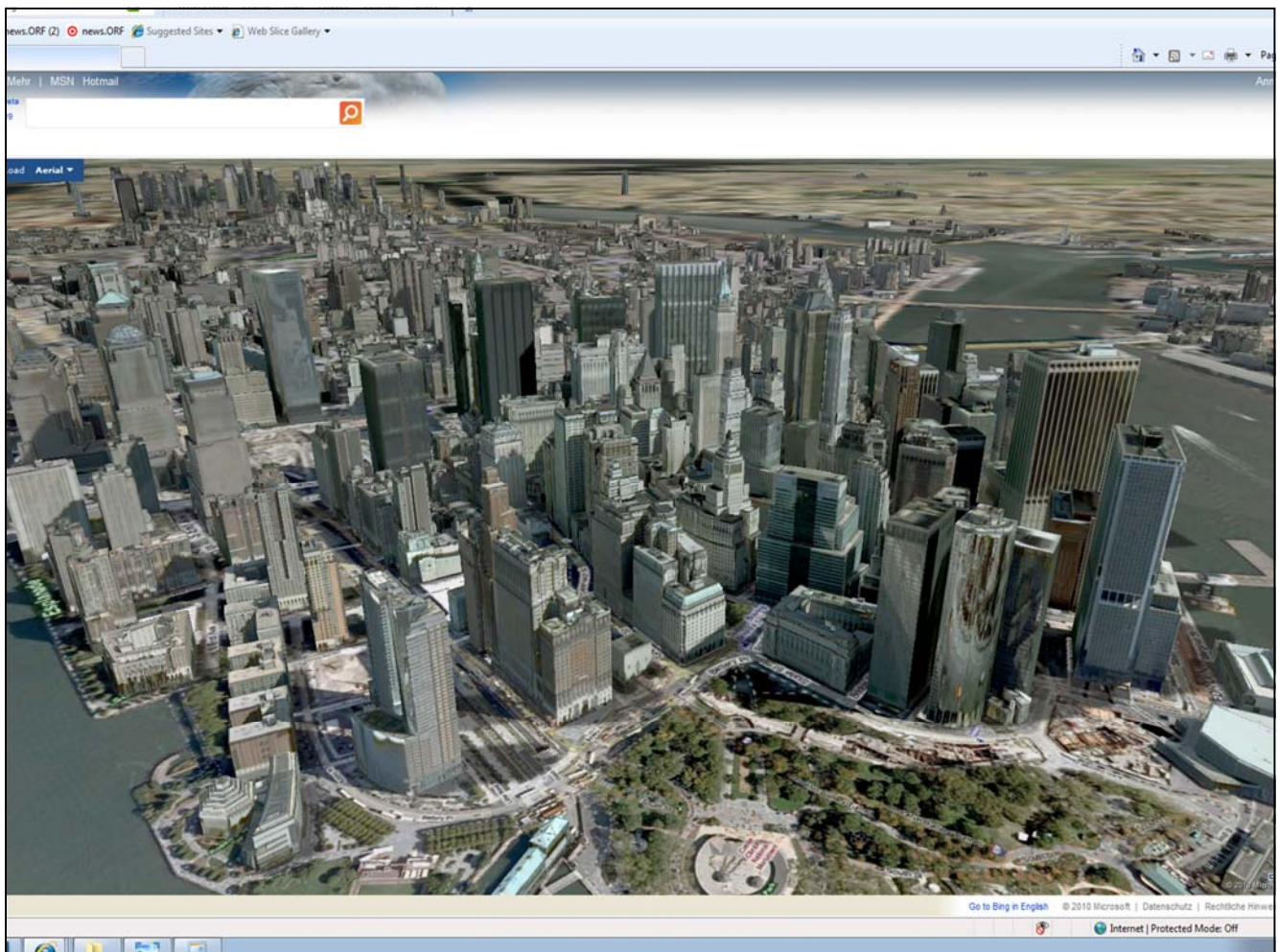




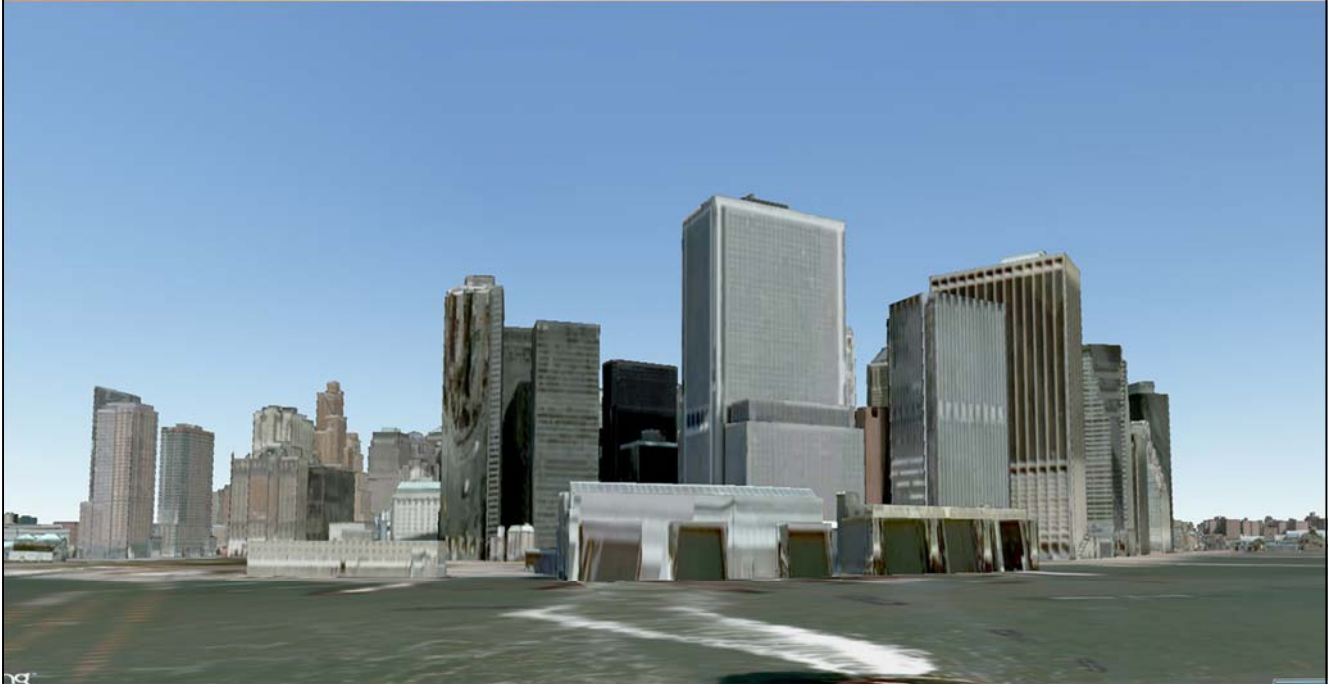
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# 3D-Model vs. 2-D Photo

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Microsoft

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Microsoft



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**Microsoft**

## **Best Visuals for BING**

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**Zoom through a stack of images**

**Microsoft**









**Vexcel's Contribution to**

**ULTRACAM**

# **Bing Maps Global Ortho**

**Airborne Image Data Collection  
UltraCam G**

**Microsoft**

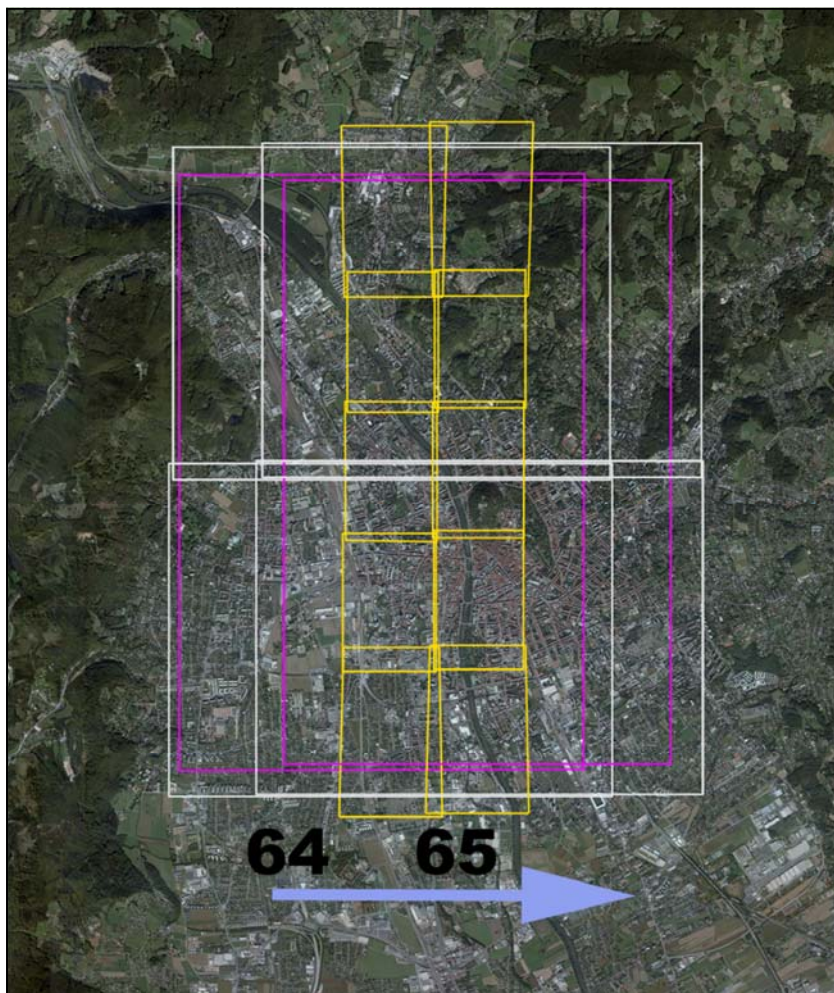
# UltraCam G

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## Wide Area Mapping

PAN: 11280 by 7640 Pixel  
NIR: 5960 by 3880 Pixel  
RGB: 28200 by 3880 Pixel

Microsoft



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Microsoft



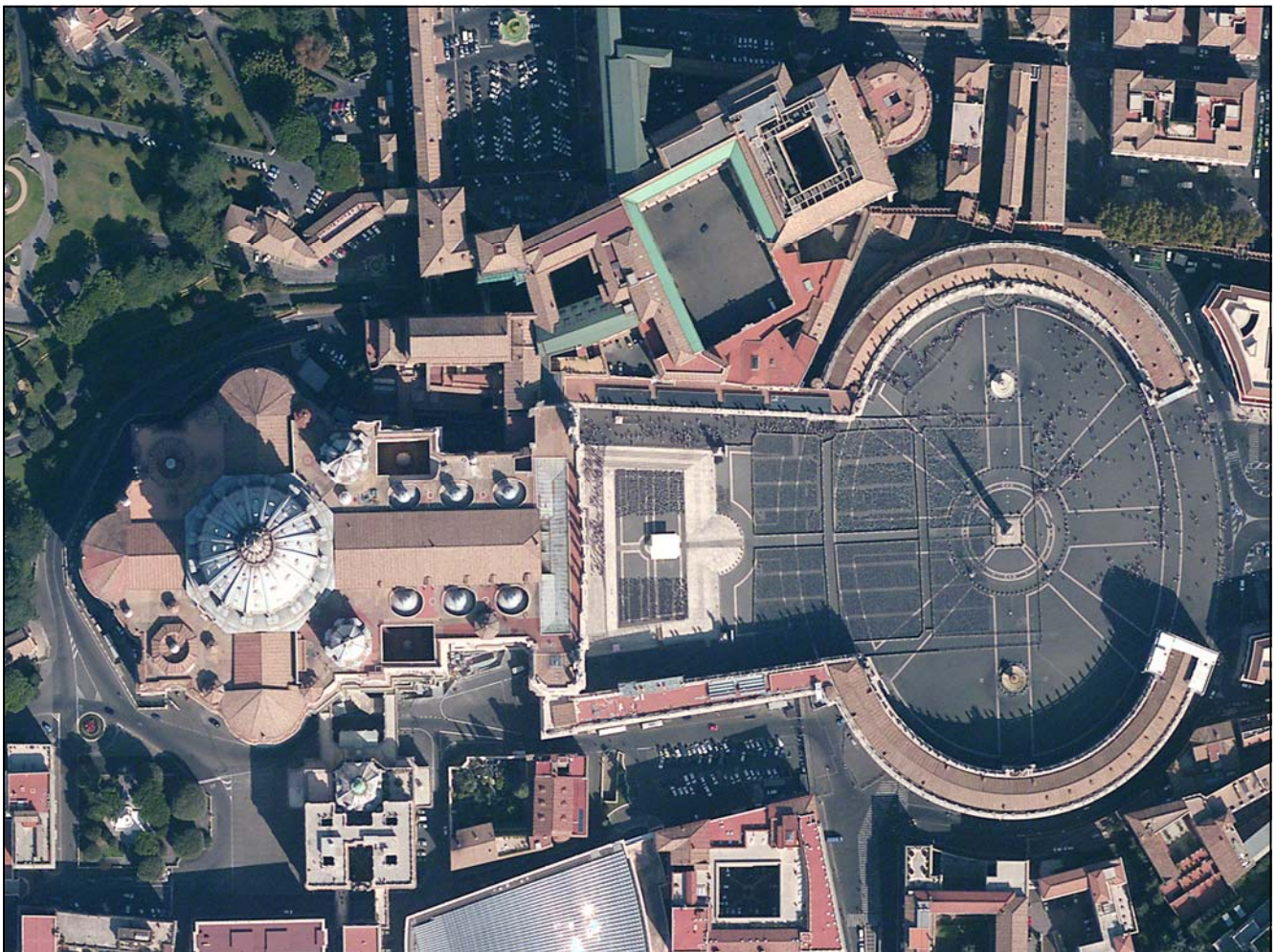
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## **Flight Mission ROME, ITALY**

**531 Images  
11 Lines**

**Microsoft**







RGB

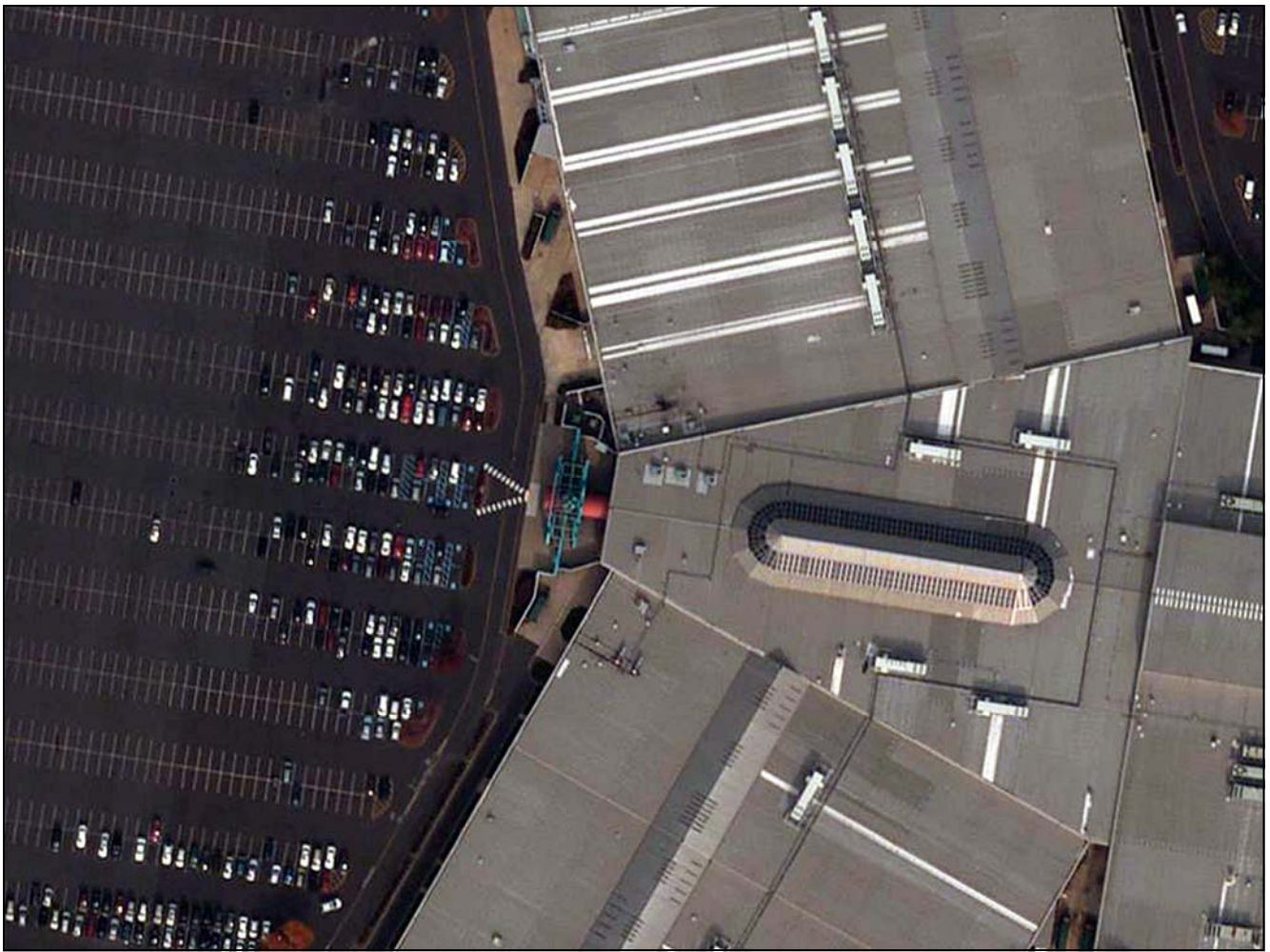
NIR



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**The UltraCam design Concept of  
Software Leveraged Hardware  
enables us to**

- **Continuously improve**
- **Focus on optimal components**
- **Flexible adapt**
- **Maintain innovation**

**Microsoft**

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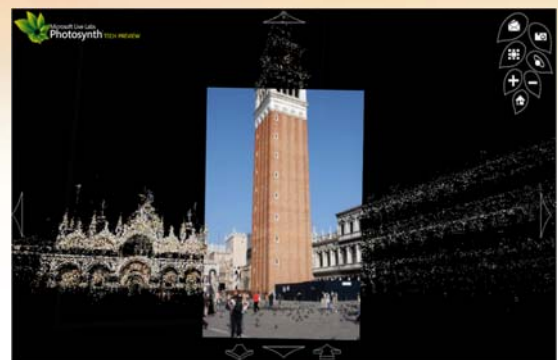
# ULTRAMAP

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## Seadragon Technology

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- Handles large blocks of images
- Smooth transitions
- Core technology for
  - Photosynth
  - Silverlight
  - UltraMap

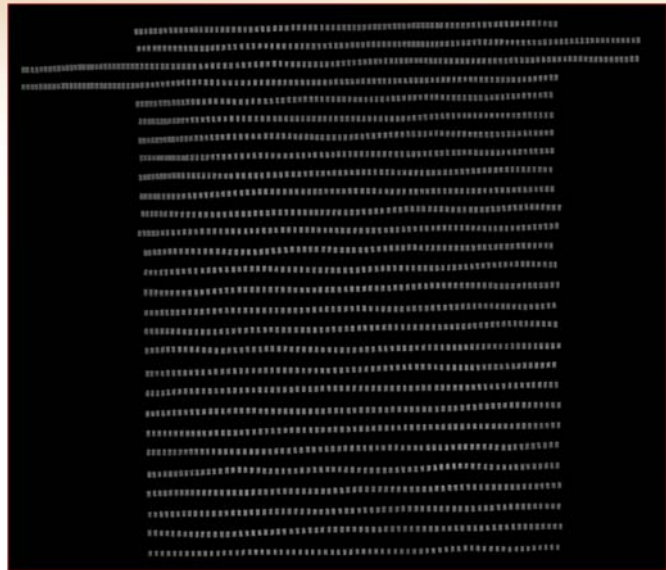




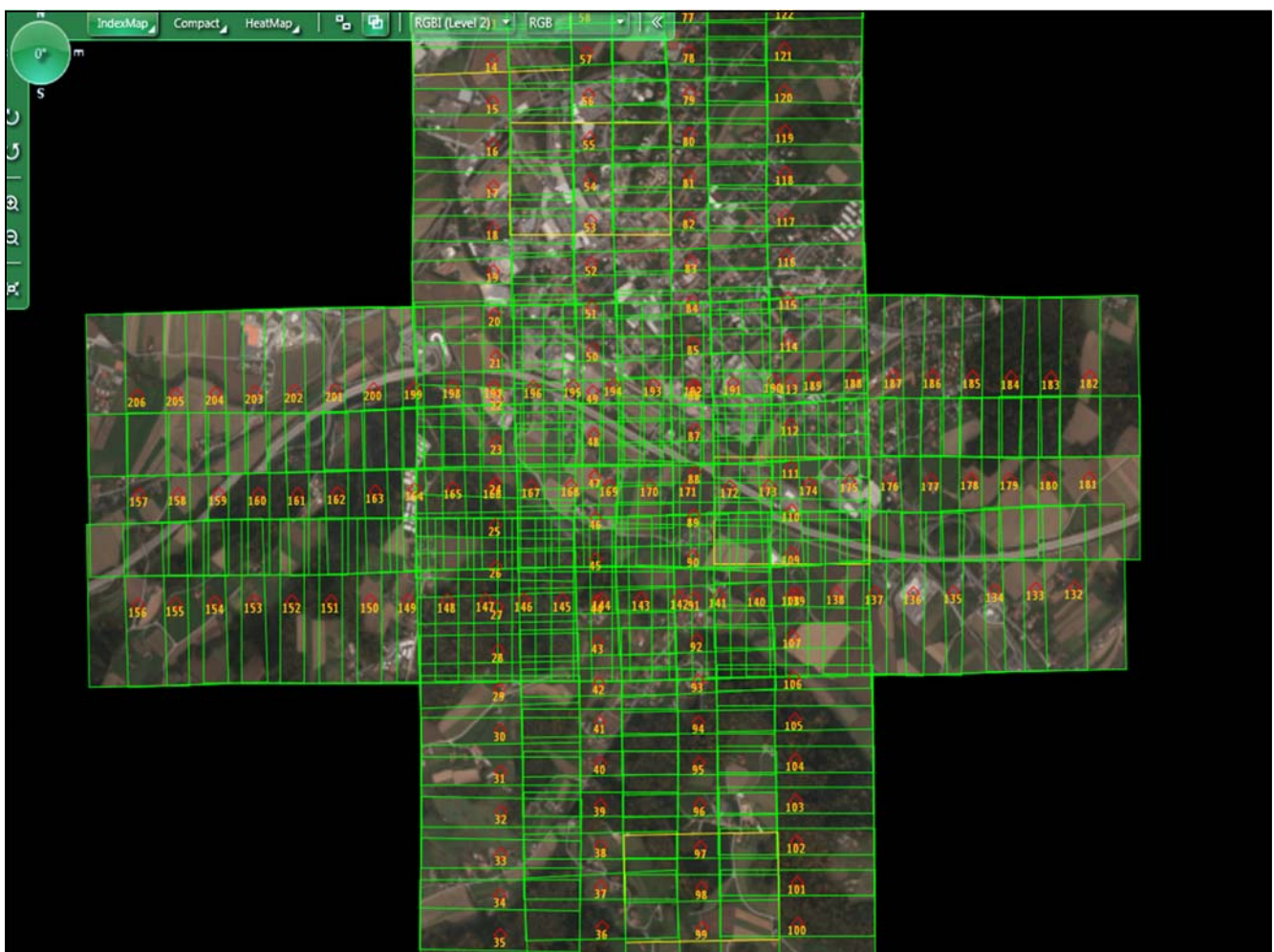


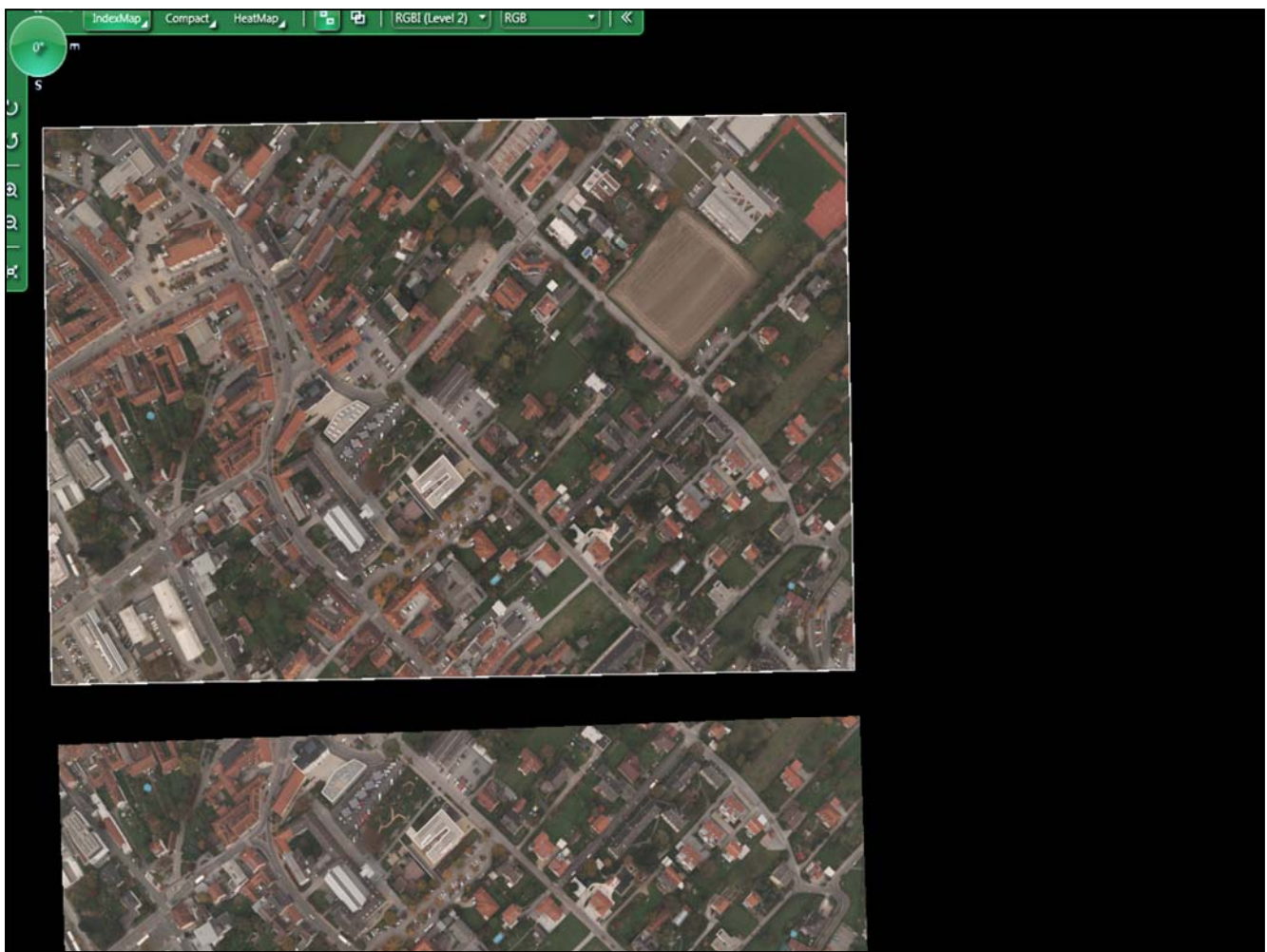
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- Huge image blocks
  - Geo-located
  - Image data (~400 MB/img)
    - 1,113 GB (> 1TB)
  - Pixel count (130Mpix)
    - 440,000 Mpix
- Quality control
  - Per image
  - Per block
- Interaction
  - Working with data



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## Project Based Color Balancing



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# ULTRAMAP

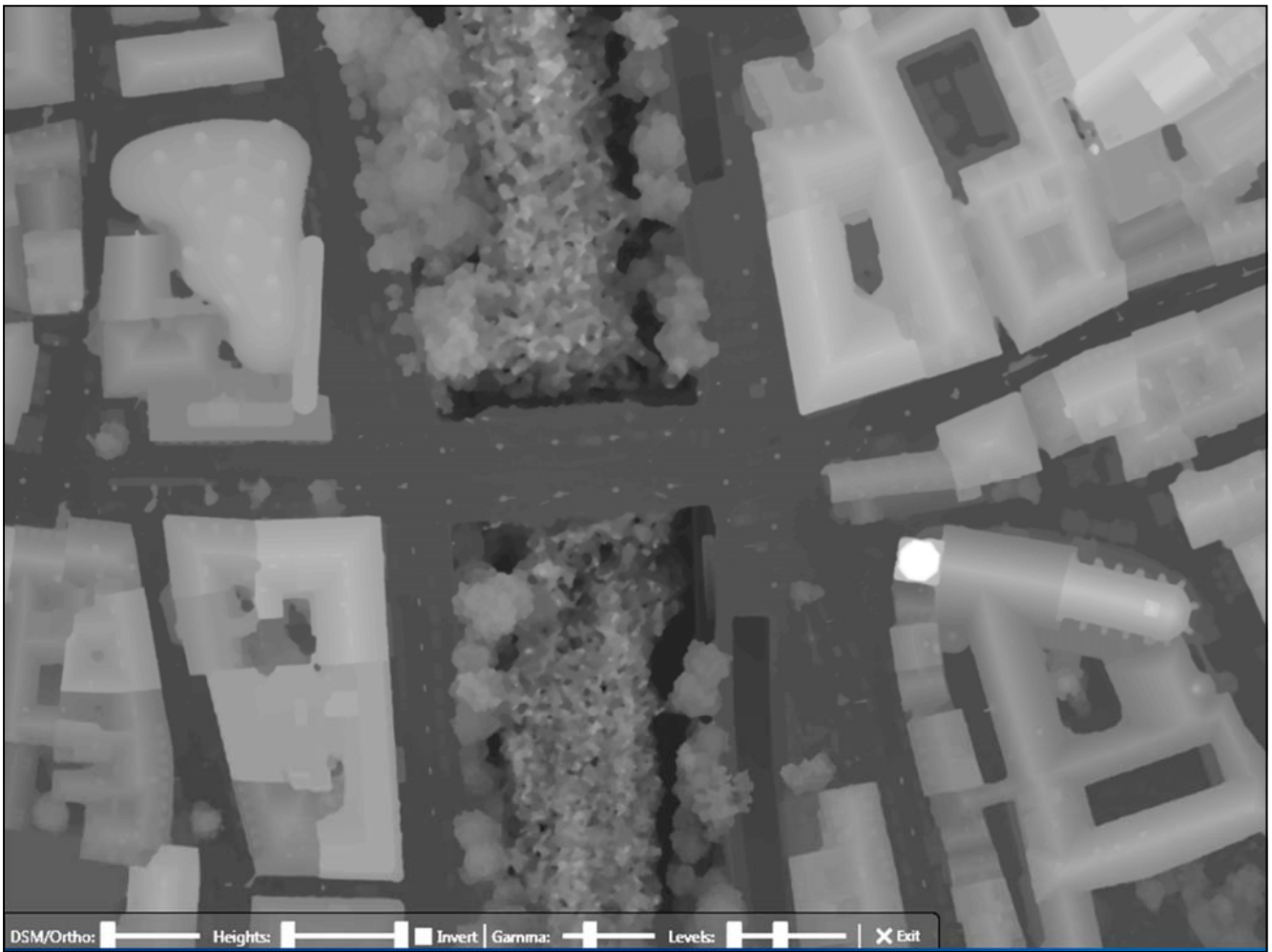
## V3.0

Technology Preview

Microsoft





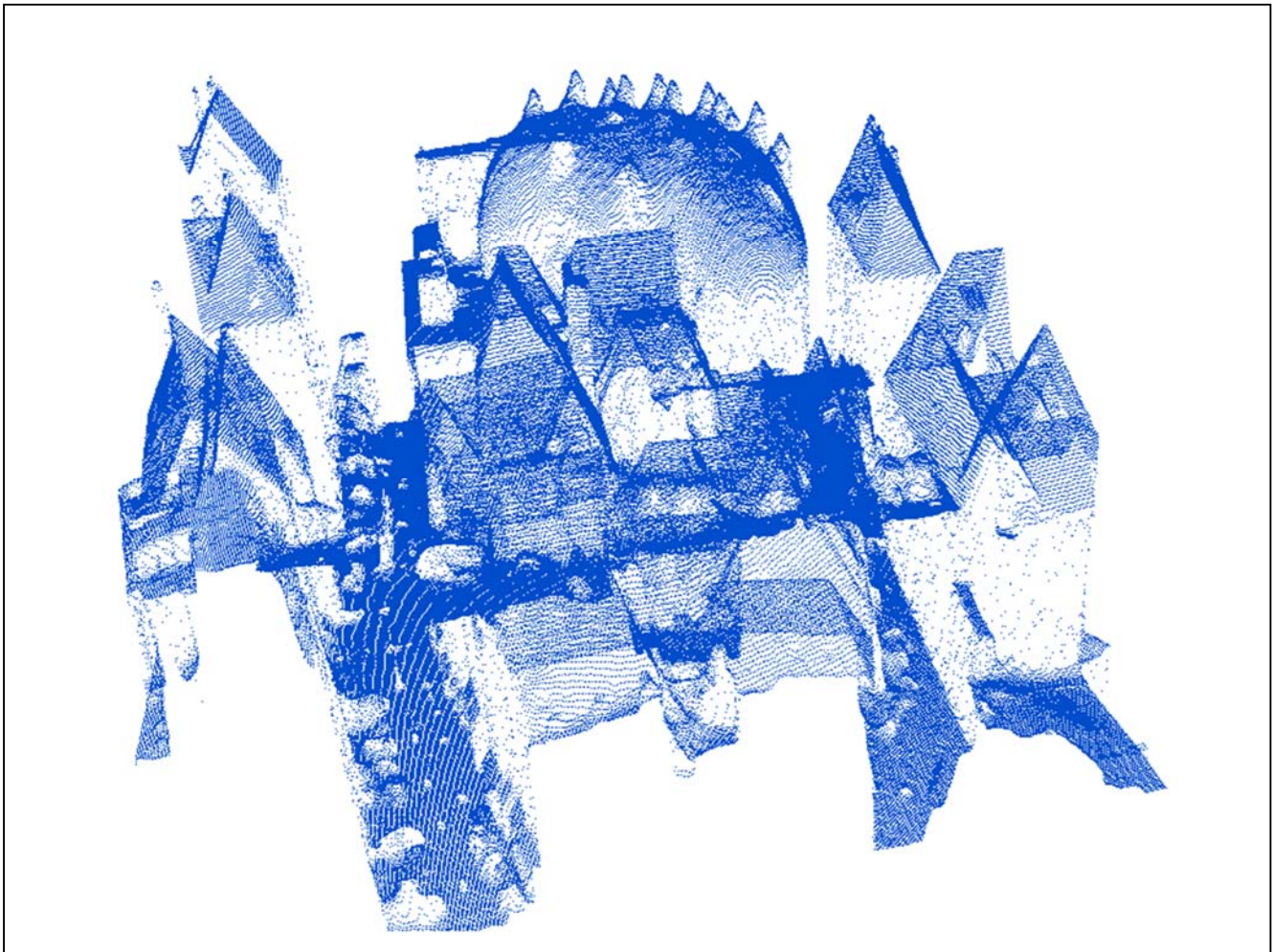
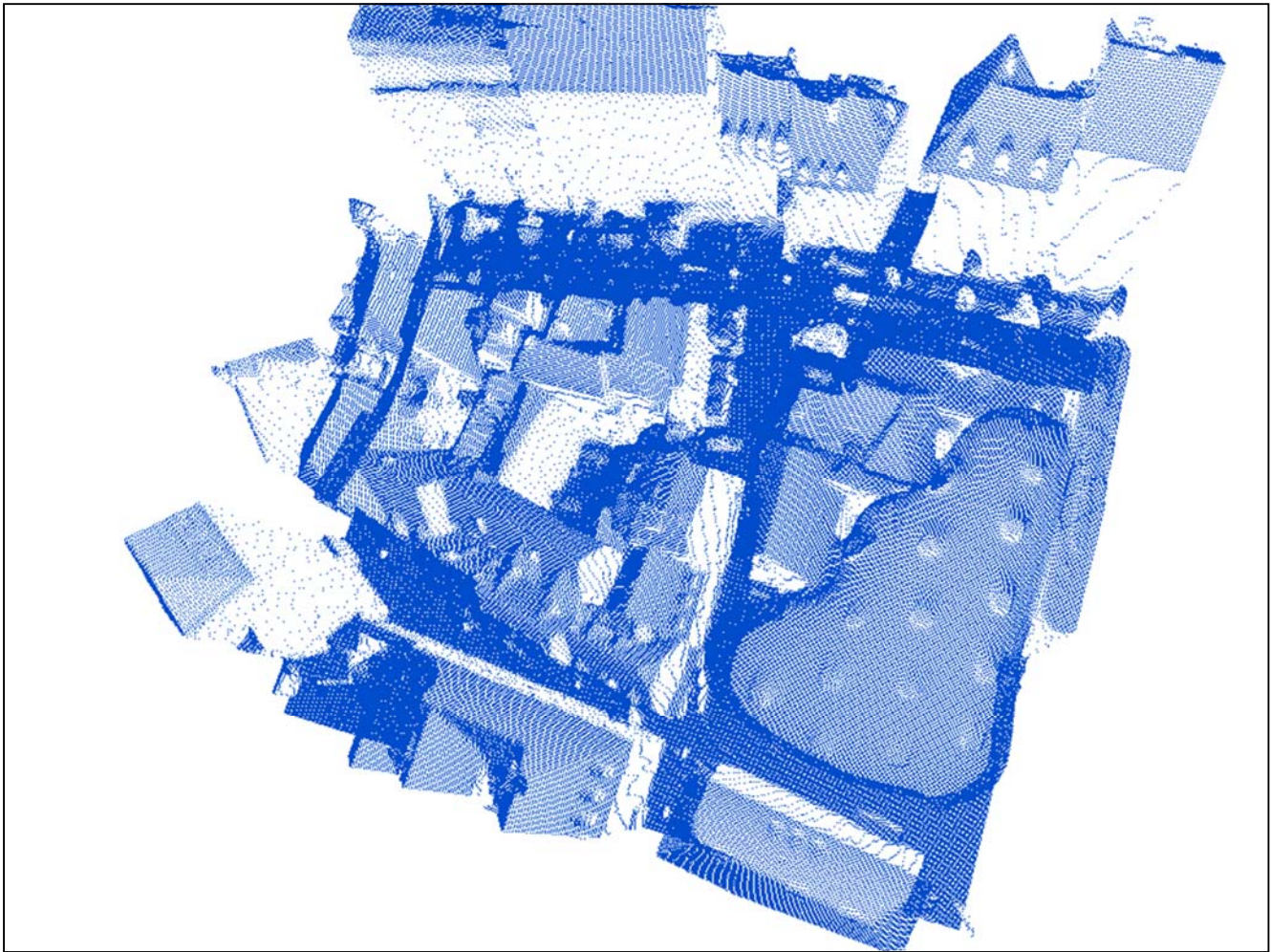


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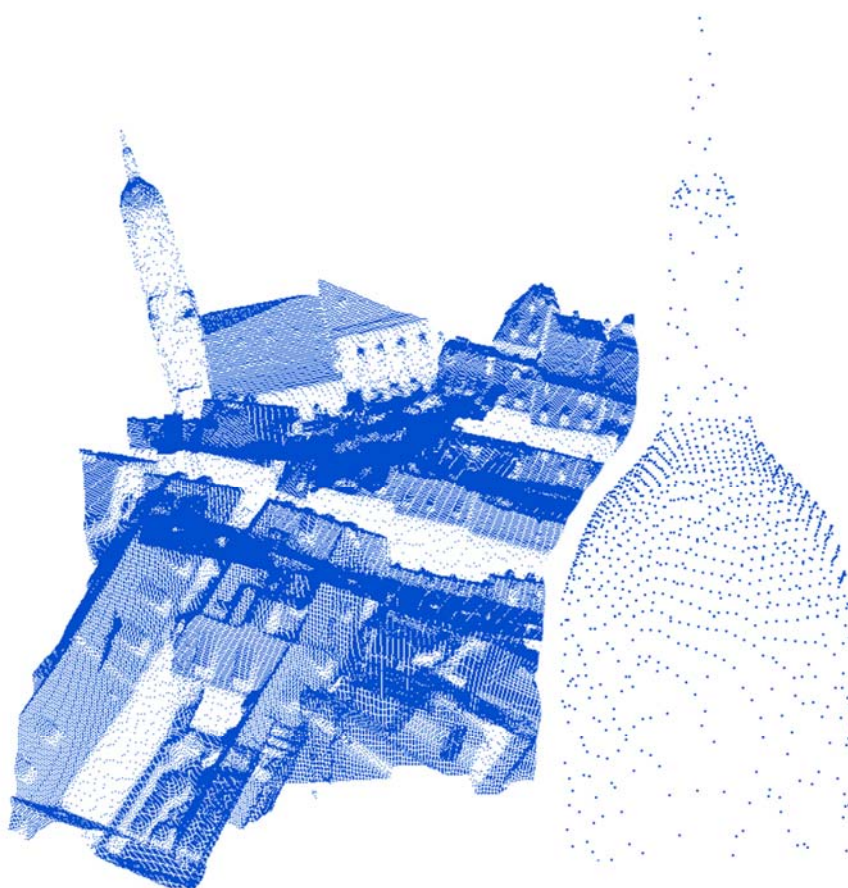


**Microsoft**













**Join us at the Presentations**

**K1**

**Keplerstr. 17**

**Floor 1**

**17.12**