

# 塑造智慧变革



HEXAGON

海克斯康



北京  
国家会议中心

2018年

9月10-12日

[2018.hexagonchina.com.cn](http://2018.hexagonchina.com.cn)

# Introducing Pegasus:Backpack 徠卡背包式移动激光扫描系统介绍

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2018, September 11<sup>th</sup>

# The story behind Pegasus:Backpack

## *A story of learning* *带您了解背包背后的故事*

...from the clients从客户那里  
学到

- They are pioneers
- They are experts
- They are (very) creative
- They challenge us every day
- 他们是先驱者
- 他们是专家
- 他们（非常）有创造力。
- 他们每天挑战我们



# The story behind Pegasus:Backpack

## *A story of learning* *带您了解背包背后的故事*

...from the mistakes从认知误区中学到

- The importance of a form factor
- The importance of the ergonomy
- Accepts that the applications world is not black and white
- 外形的重要性
- 人体工程学的重要性
- 应用领域并不是非黑即白的



# The story behind Pegasus:Backpack

## *A story of learning* *带您了解背包背后的故事*

...from the industry从行业中学到

- The importance of the positioning
- The “where” part is always a great value
- 定位的重要性
- “在哪里” 一直是很有价值的



## What is Pegasus:Backpack ? 什么是背包式移动激光扫描系统

- ❖ A complete and the most advanced **Mobile Mapping System** commercially available worldwide
- ❖ Packaged in a **wearable form factor**
- ❖ Capable of absolute direct georeferencing outdoor and **indoor** by combining GNSS, INS and SLAM navigation
- ❖ It provides **images and lidar** data
- ❖ 全世界最完备和最先进的移动测绘系统
- ❖ 以可穿戴形式包装
- ❖ 能够结合GNSS、INS和SLAM导航实现室外和室内的绝对直接地理定位
- ❖ 它提供图像和激光雷达数据。



## Pegasus:Backpack Awards 移动背包获得的奖项

- ❖ Wichmann Innovations Award 2015
- ❖ Reddot Design Award 2016
- ❖ Microsoft Indoor Localization Competition 2016 (leading results / 5cm)
- ❖ Win by design, formances and votes from professionals
- ❖ Introduced in the market in 2015, still unique technology marketed on global scale
- ❖ 维希曼创新奖2015
- ❖ 红点设计奖2016
- ❖ 微软室内定位比赛2016（领先成绩/5cm）
- ❖ 从设计、表演和专业人士的投票中取胜
- ❖ 2015在市场上推出的，仍以全球规模销售的独特技术



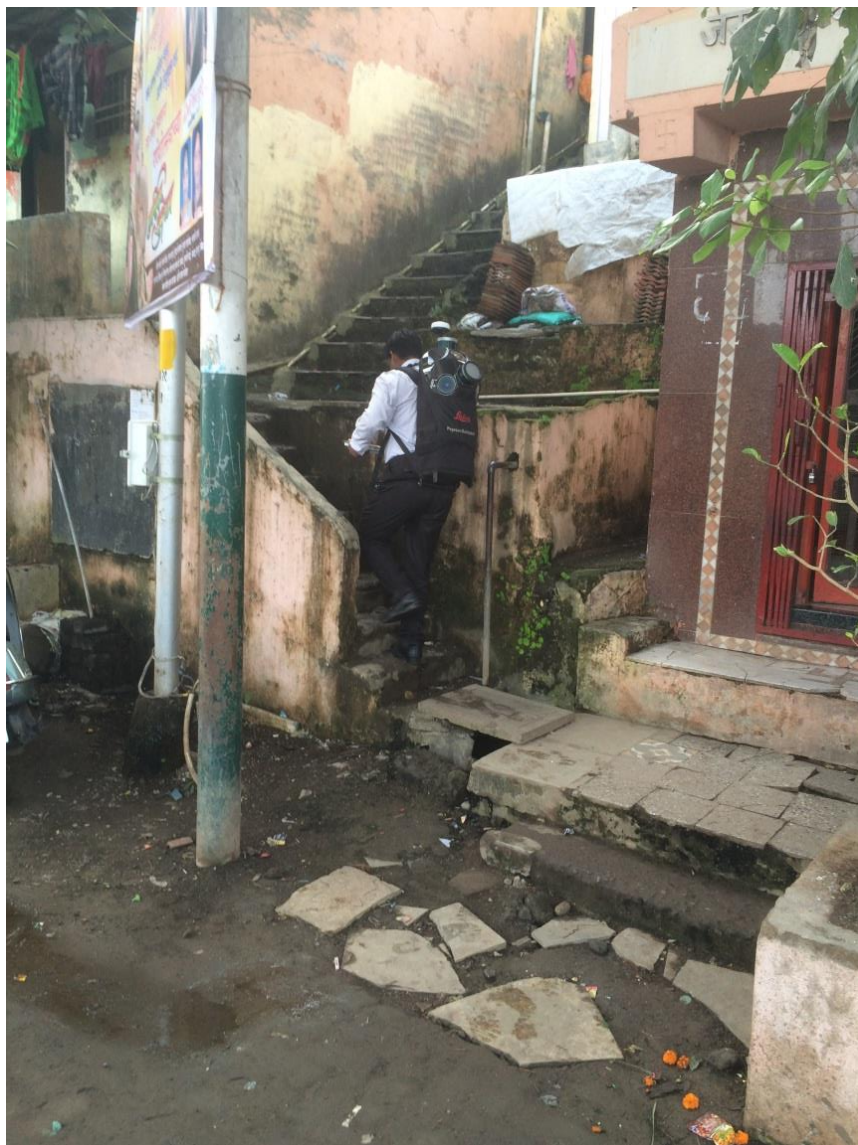
## Some success stories...一些成功的故事...



Mumbai – India

孟买-印度

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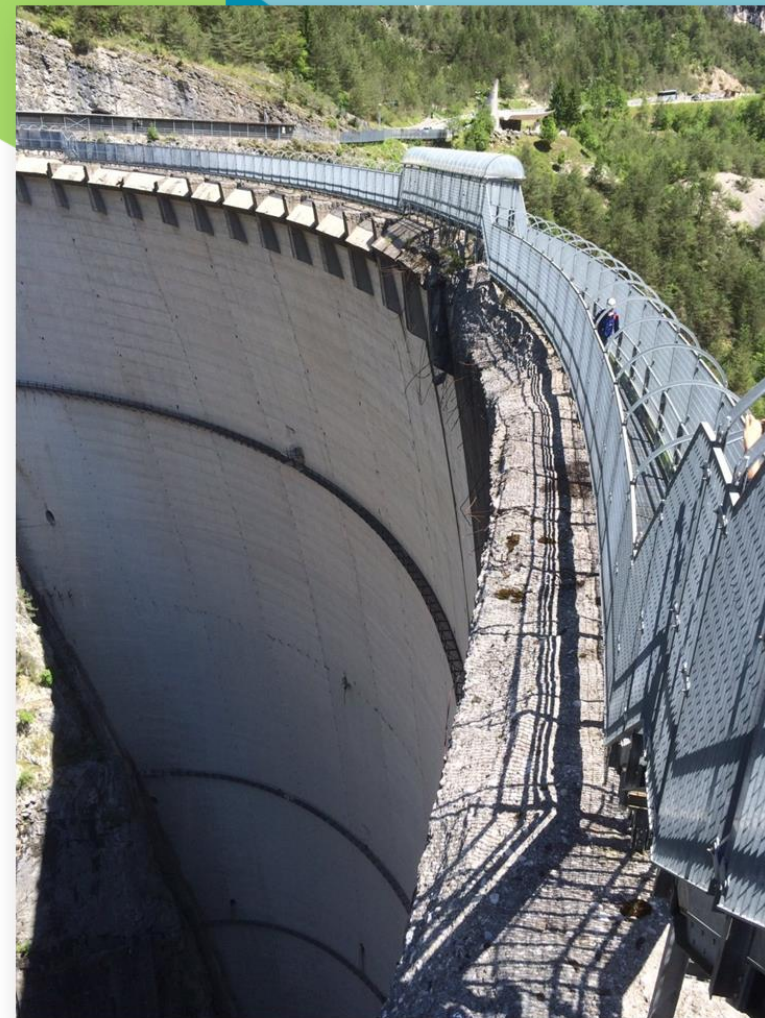
## Some success stories...一些成功的故事...



Paris – France

巴黎 – 法国

## Some success stories...一些成功的故事...



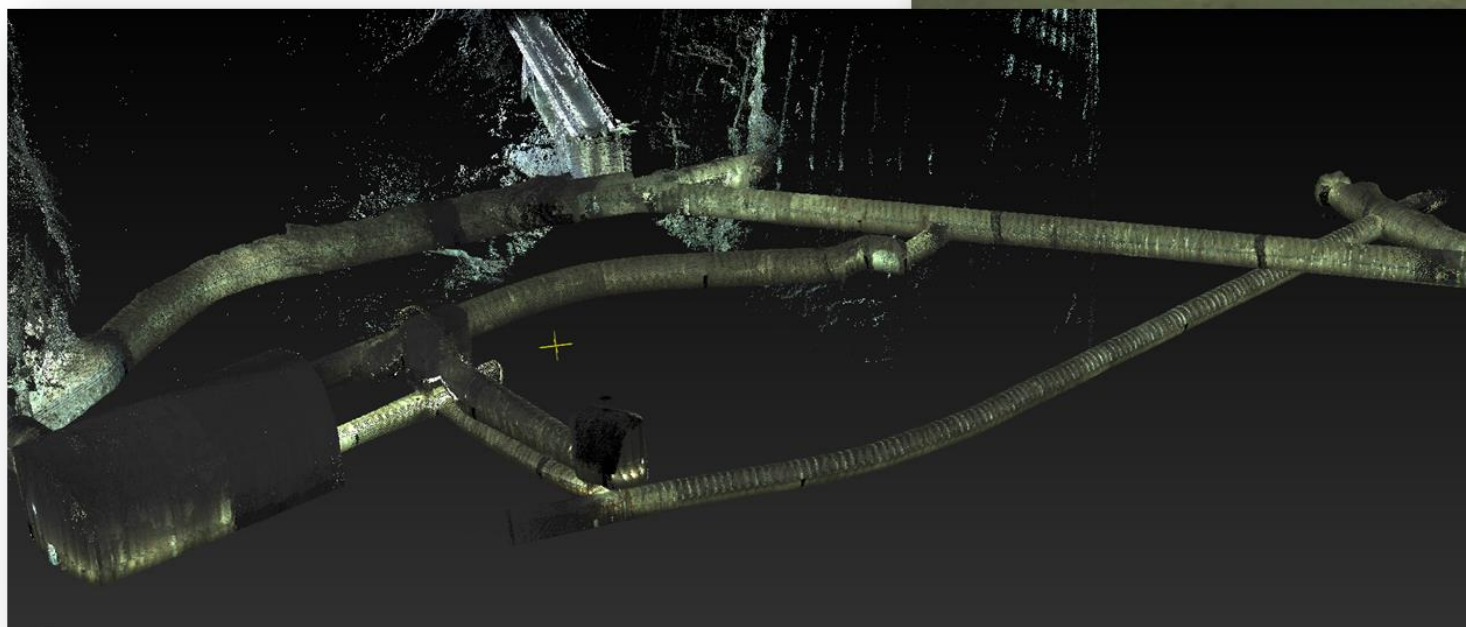
Vajont – Italy  
瓦扬特-意大利

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Some success stories...一些成功的故事...



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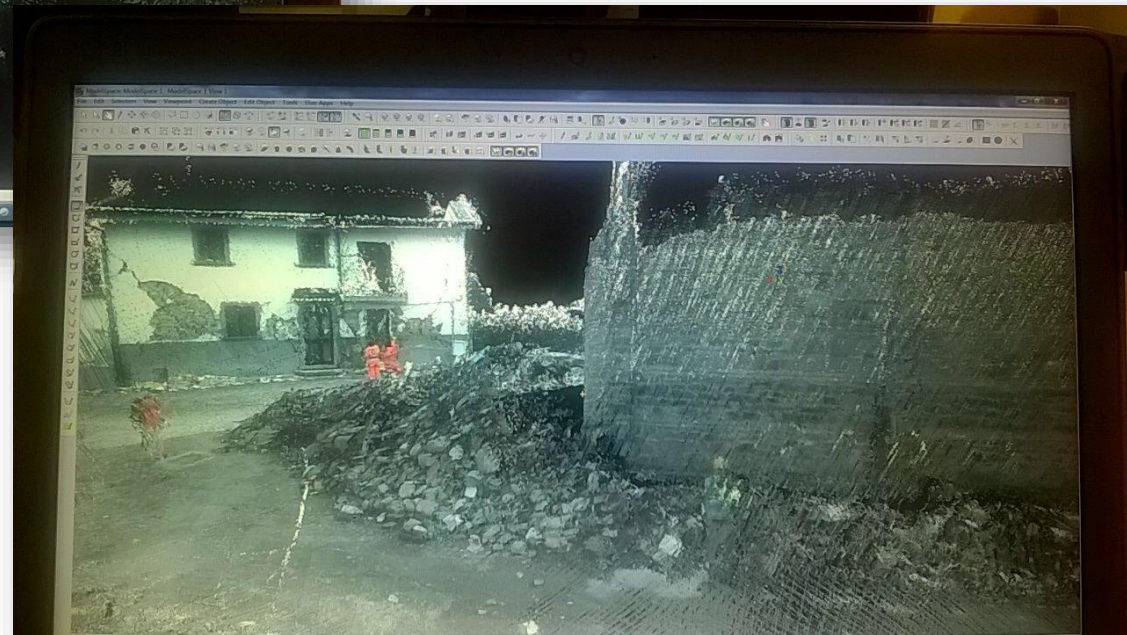
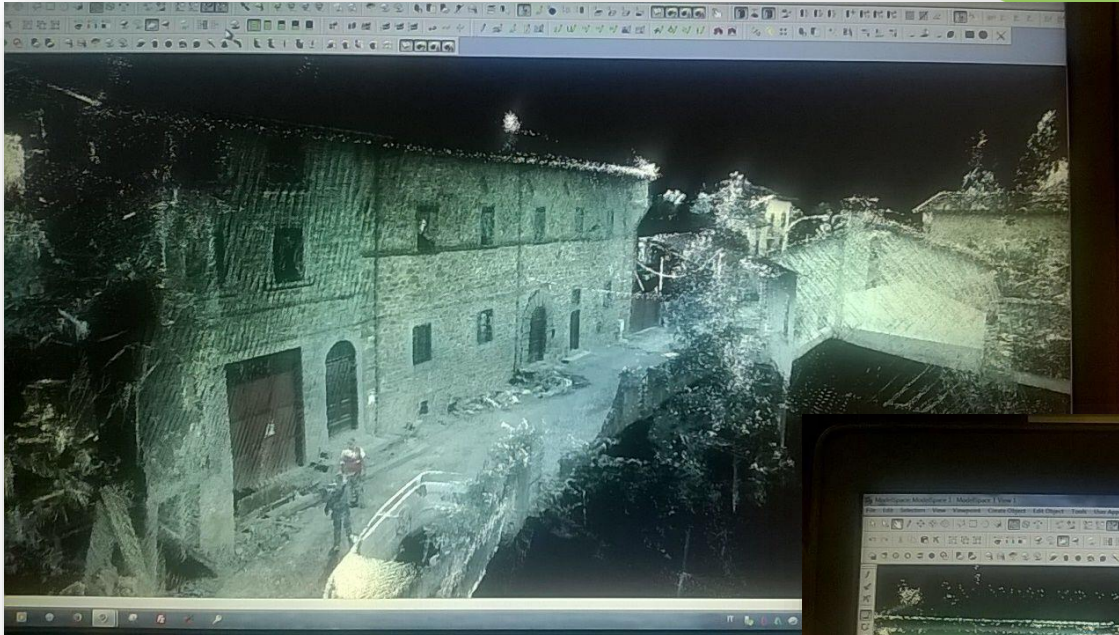
## Some success stories...一些成功的故事...



Amatrice – Italy

阿马特里切-意大利

## Some success stories...一些成功的故事...



Amatrice – Italy  
阿马特里切-意大利

## Insight : a 70.000 sqm BMW plant 直击：一个70000平方米的宝马工厂

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Asset management with Pegasus Backpack

移动扫描背包应用于资产管理

Pegasus:Backpack collection  
and aerial image of 70,000sq  
meter BMW plant

移动扫描背包采集了70000平方  
米宝马工程的图片信息

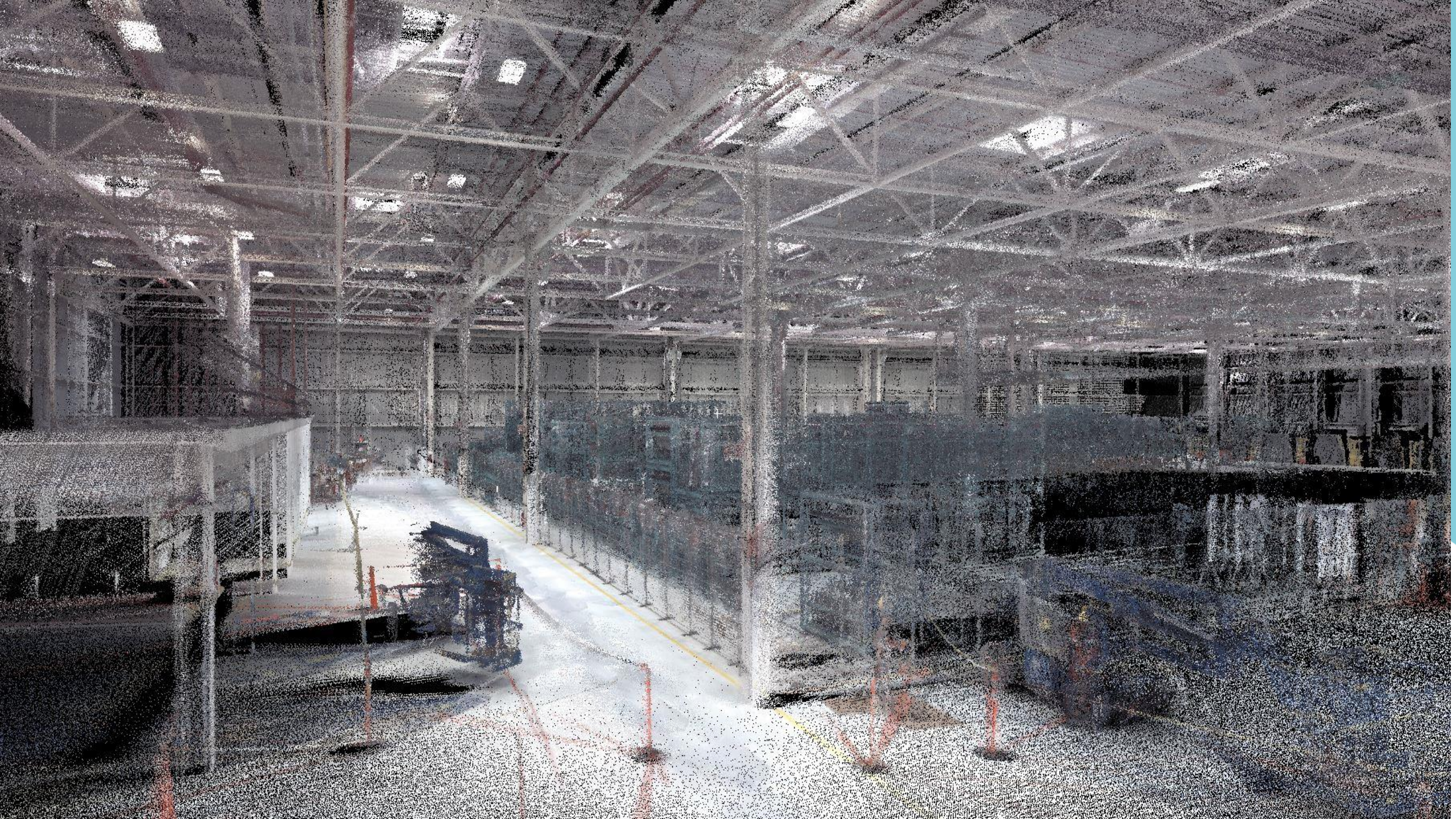






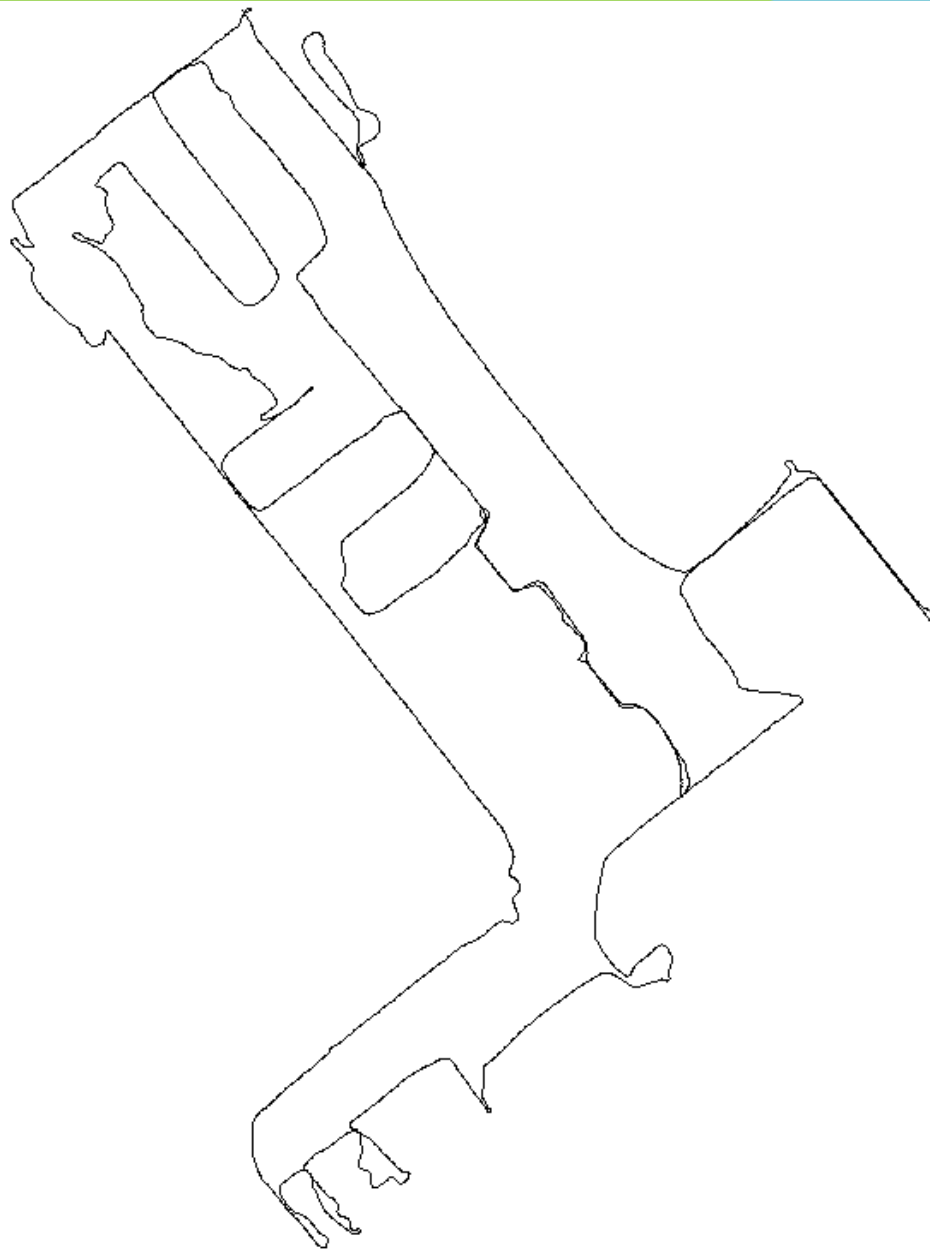








# Trajectory弹道

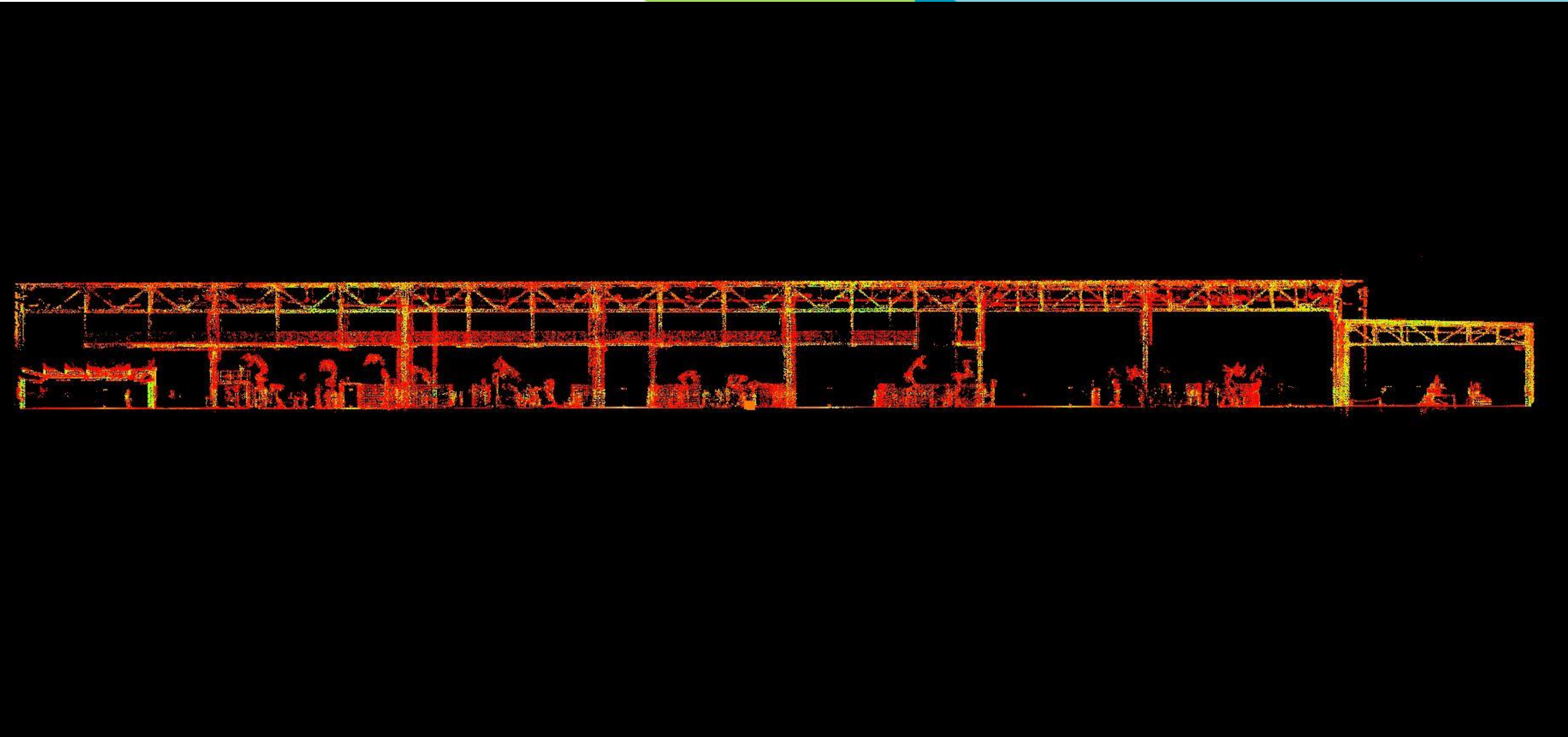


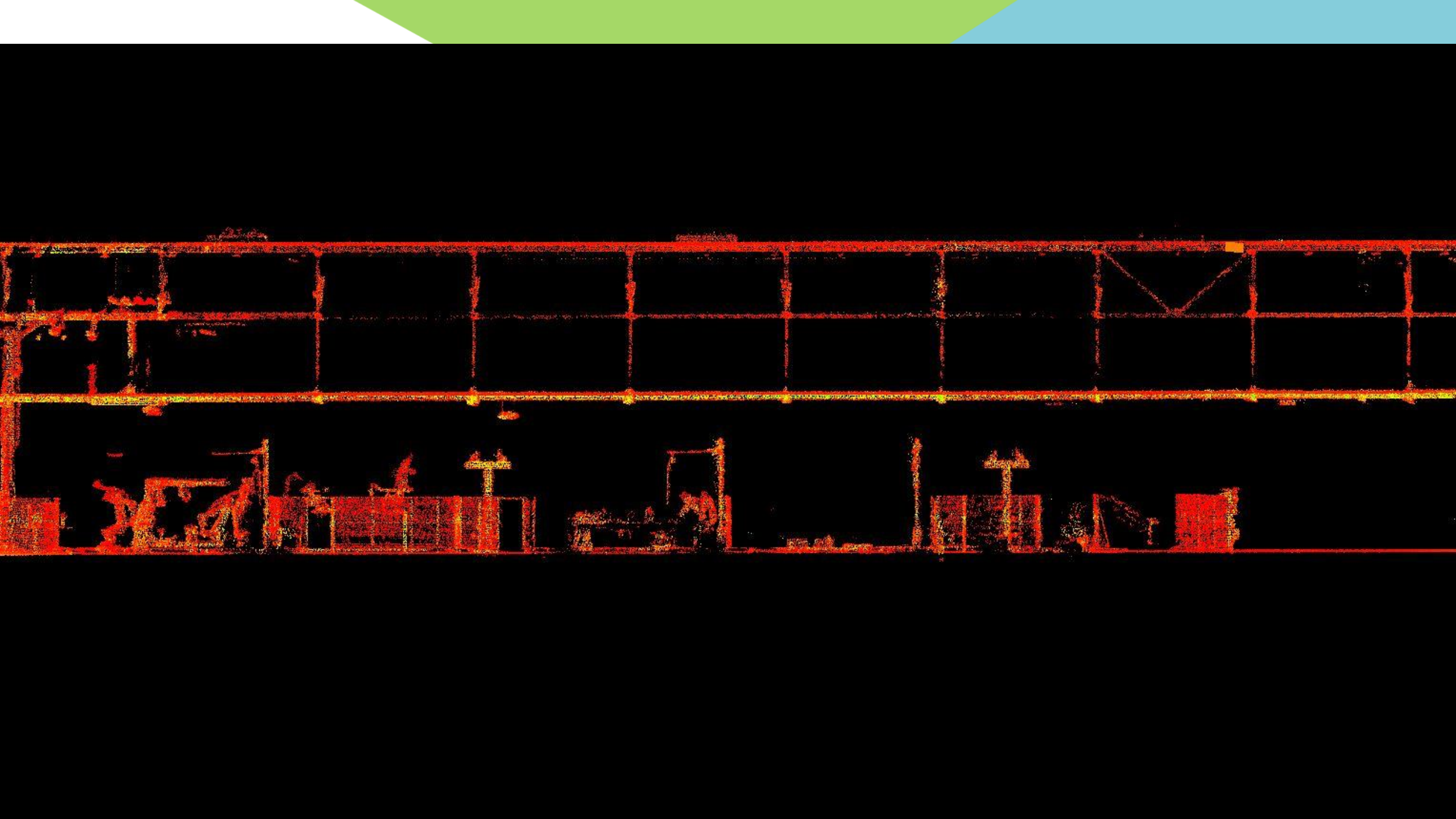
Panorama images from Pegasus Backpack移动扫描背包采集的全景照片

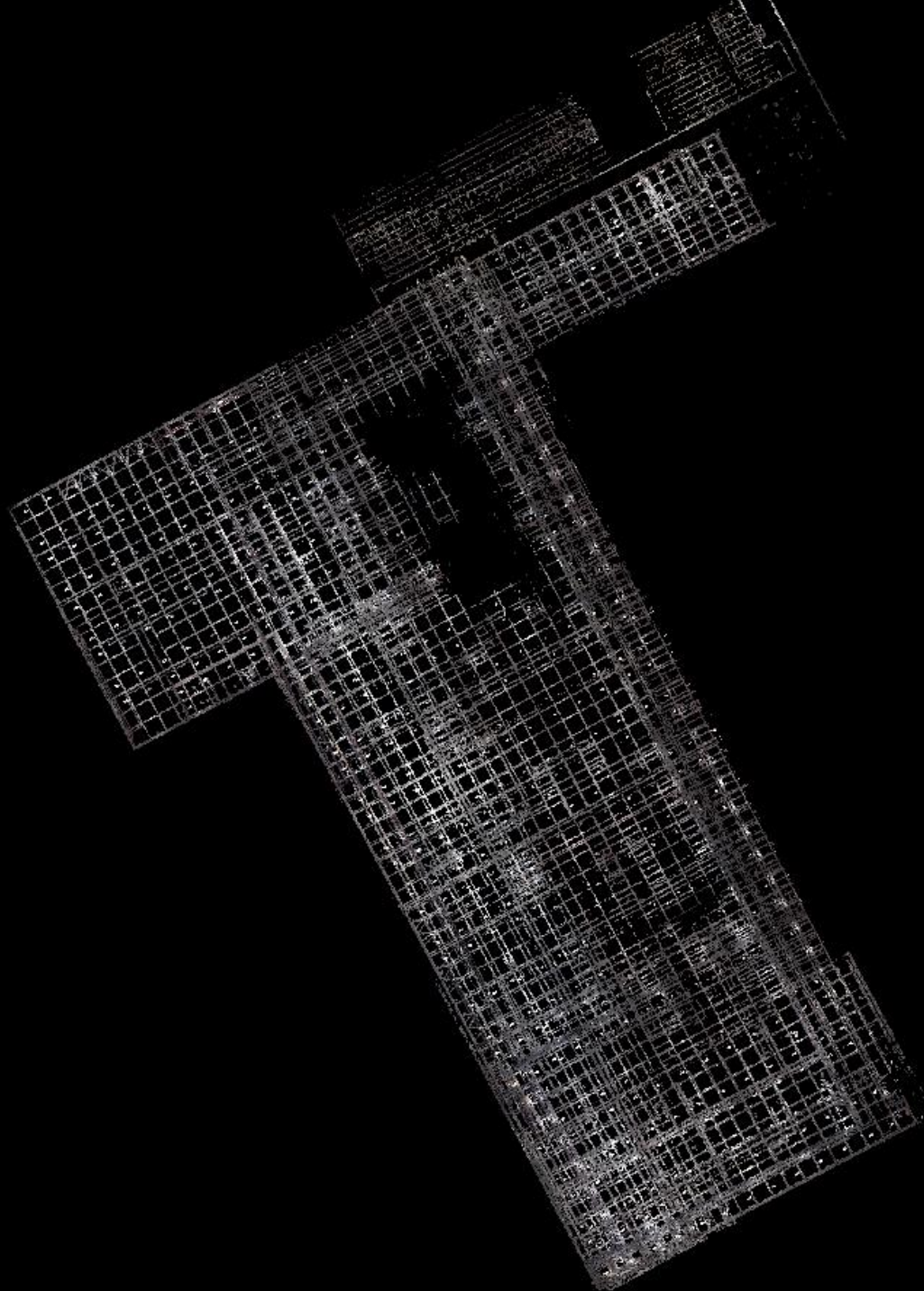


Panorama images from Pegasus:Backpack移动扫描背包采集的全景照片







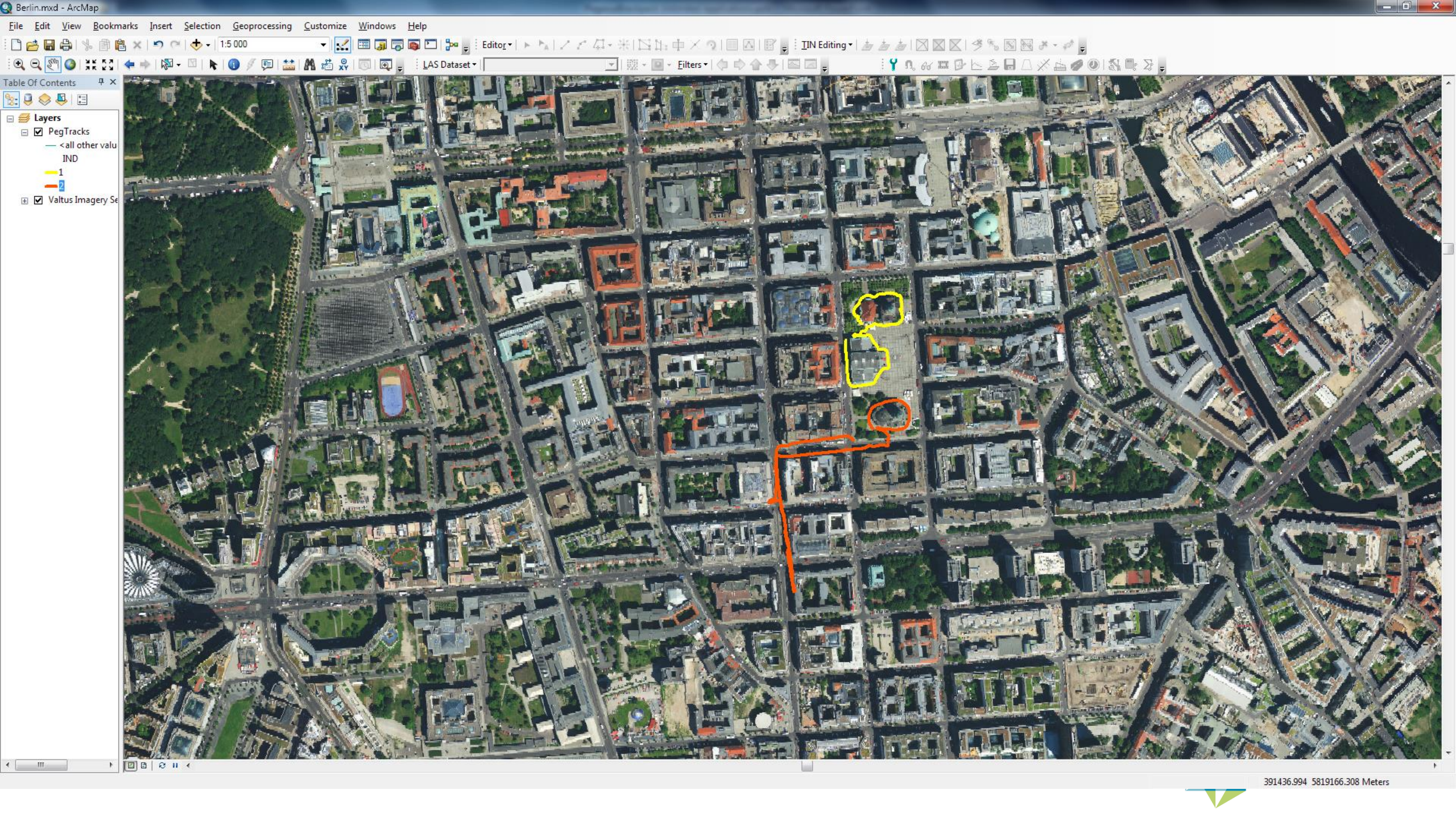


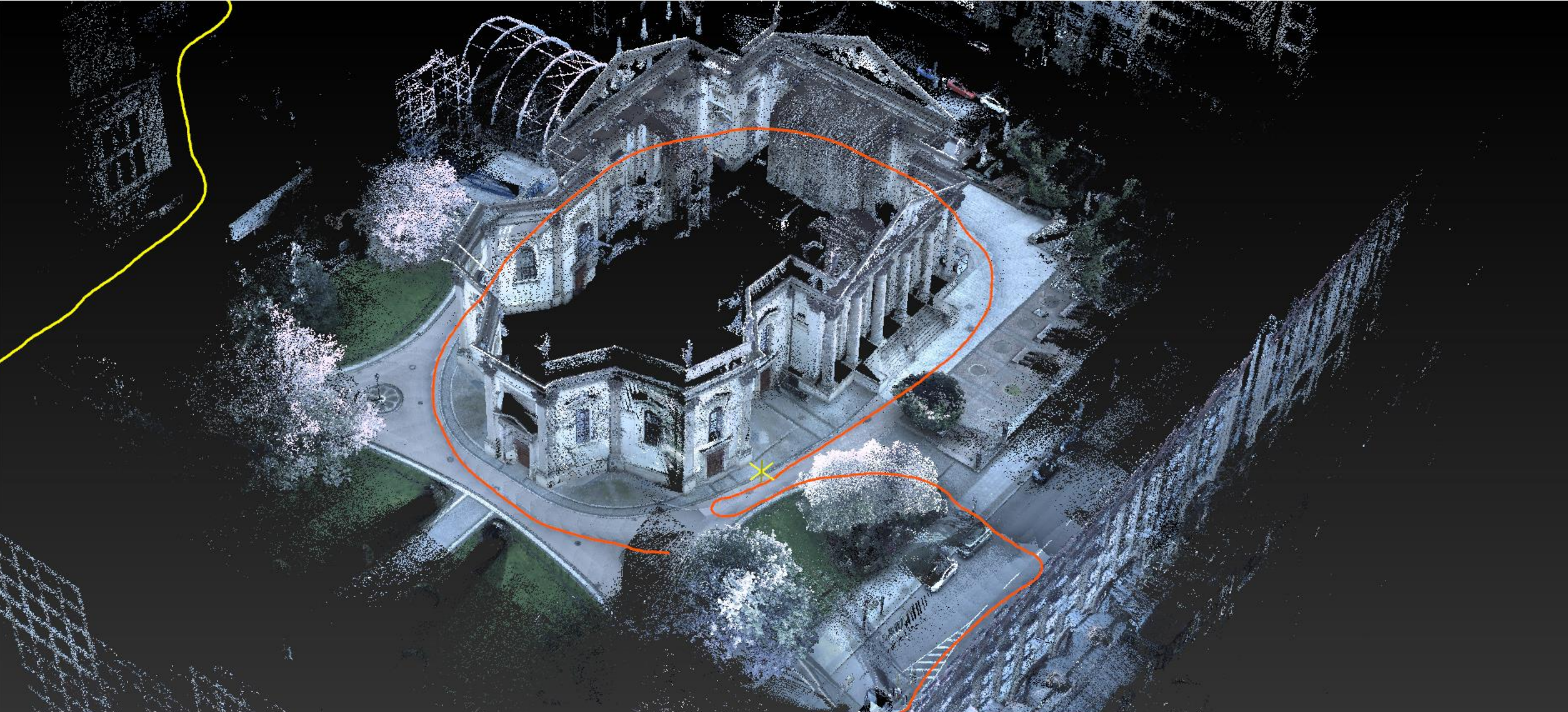
## Insight : Berlin city and underground tube 直击：柏林及地下管道

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Rapid MMS surveying with Pegasus Backpack

快速移动扫描测量系统





390 888.661, 5 819 268.348 74.037 0.030

D Snap  
0.2 ☒ 2D ☐ 3D  
Parallax:  FOV:   
☒ Minimum point thickness

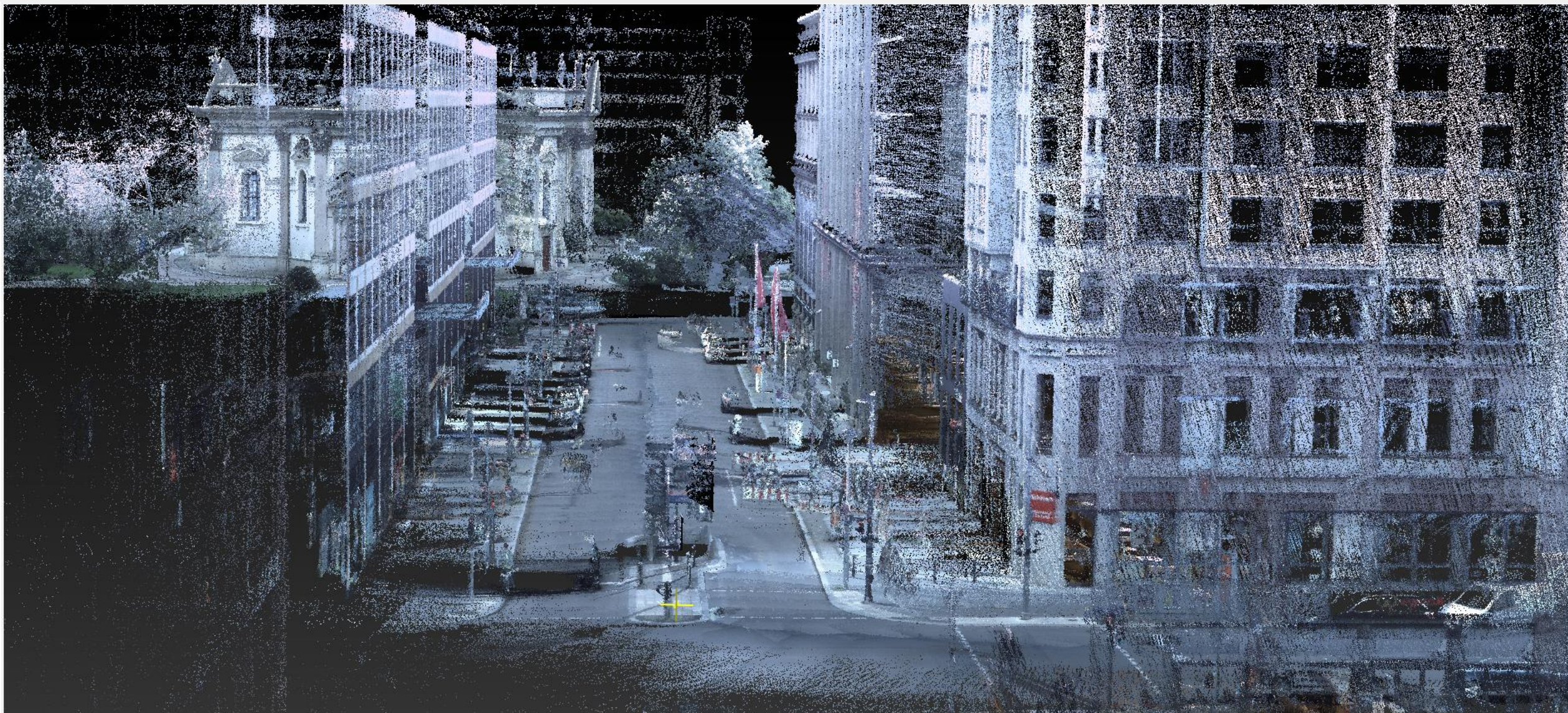


Task: Measure

Target:

LDAR Attributes

Planar Analysis



390 723.409, 5 819 230.344

73.579

0.063

D Snap

0.2

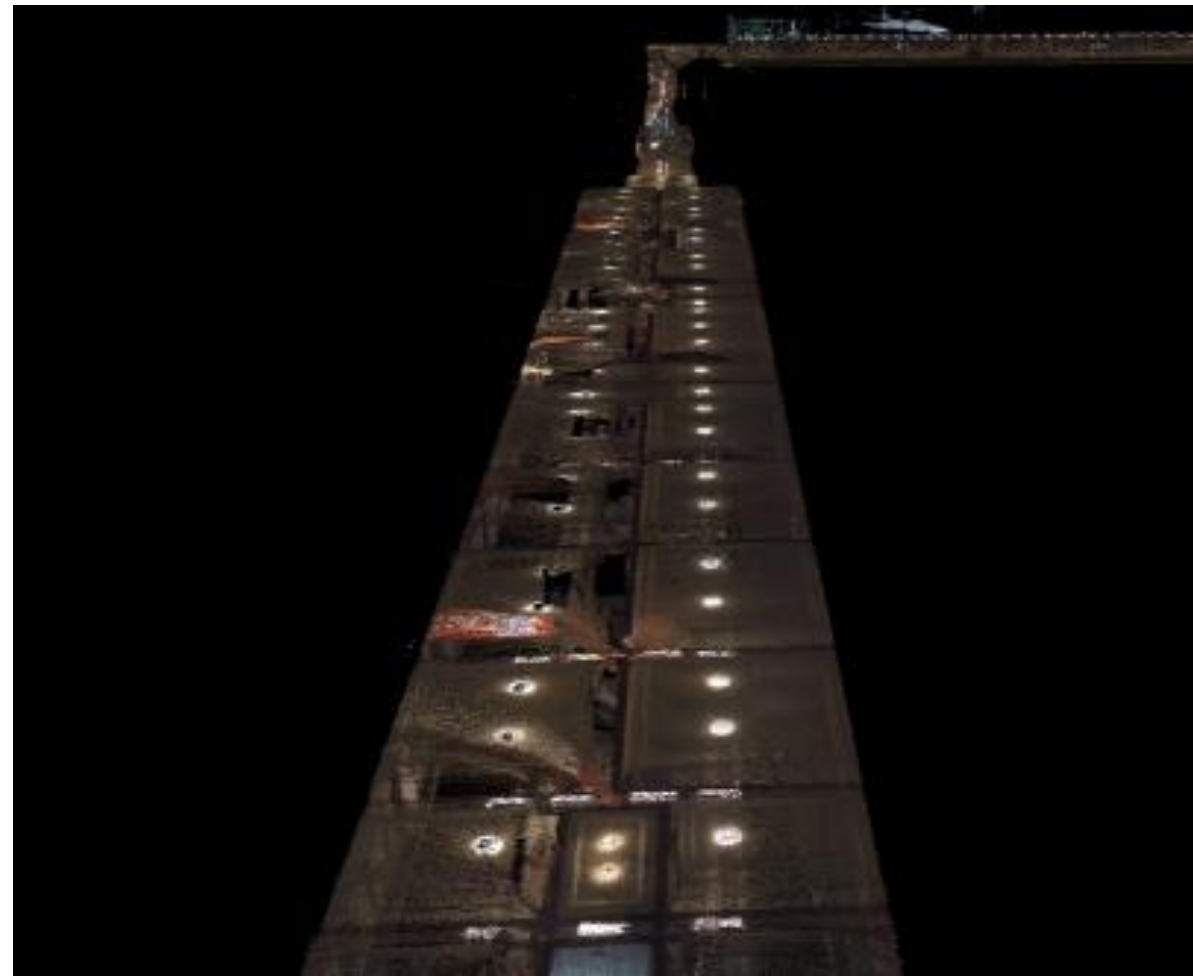
2D

3D

Parallax:

FOV:

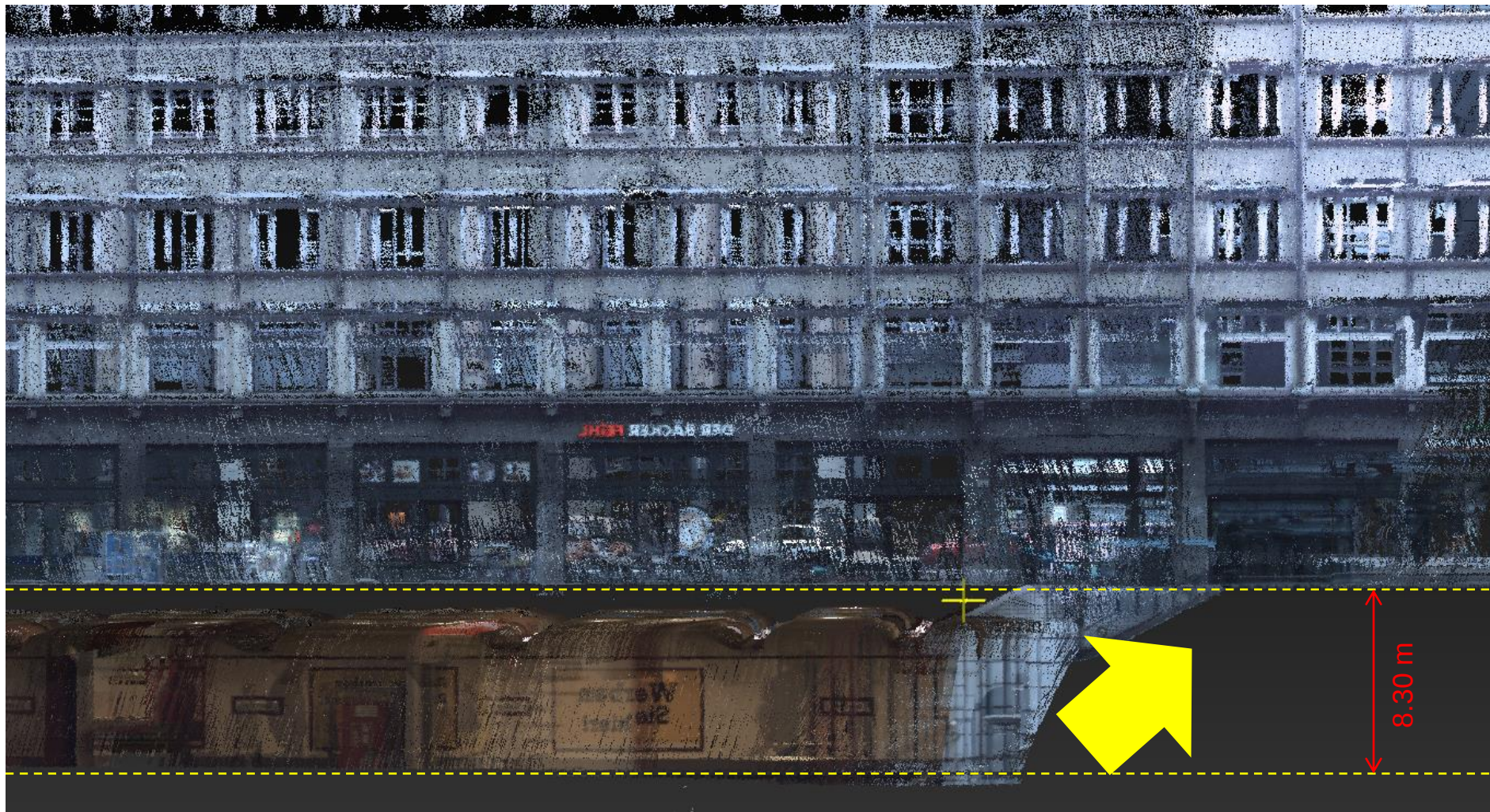
☒ Minimum point thickness



## The importance of the “where” “在哪里” 的重要性



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**Insight : fast response for disaster management**  
**Mexito city earthquake Sep 2017**  
**直接：灾害快速响应**  
**2017年9月墨西哥城市地震**

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Rapid MMS surveying with Pegasus Backpack  
快速移动扫描测量系统

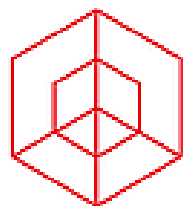


## Insight : on-line distribution of lidar data 直击：激光雷达数据的线性分布

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Mapping villages and cities to create a content program

测绘村镇创建内容方案



# e-cassini

all subscribers.

**2017**

YEAR OF  
LAUNCH

**43**

MUNICIPALITIES  
AVAILABLE

**1 200**

KILOMETRES  
RECORDED

**100**

BILLIONS OF  
POINTS



## Conclusion : the key points结论：关键点

- Form factor (wearable) and ergonomomy
- Length of the operation time
- Worldwide service organization
- Outdoor to Indoor use (SLAM and/or GNSS)
- 规格（可穿戴）并且符合人体工程学
- 超长作业时长
- 全球服务体系
- 室内外都可使用（SLAM and/or GNSS)
- Comprehensive and mature processing workflow
- Absolute positioning / outdoor and indoor merged and together
- 全面成熟的作业流程
- 绝对定位/室外与室内融合





Thank you !

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—— 谢 谢 ——

