



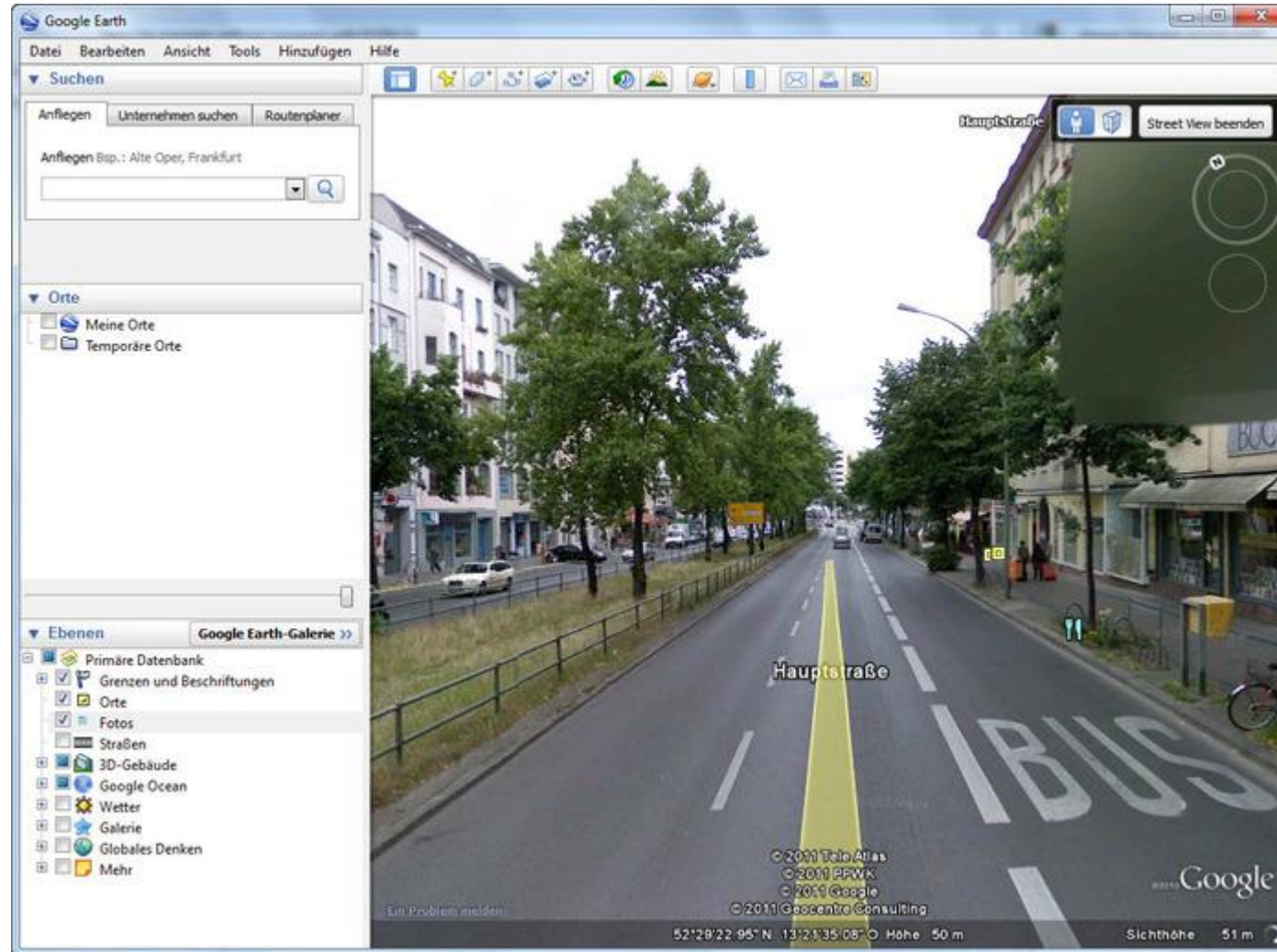
RealWorld – RealCity – RealTerrain

## Airborne Reality Capture – The Integral World of Leica Airborne Solutions

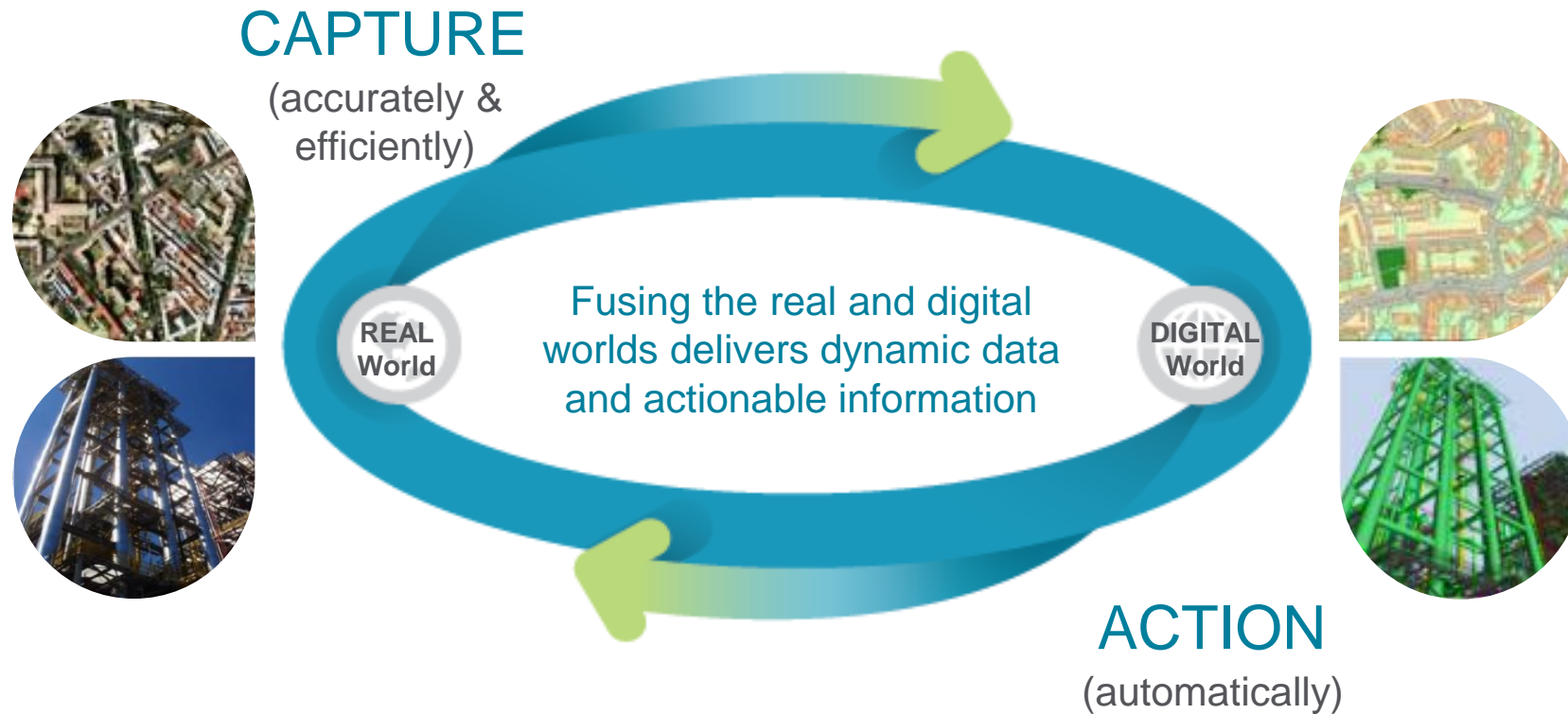
Photogrammetric Week, September 11, 2017

Dr. Hartmut Rosengarten, Director Airborne Solutions EMEA, Leica Geosystems

# We are used to Geoinformation.....



# Fusing the real and digital worlds



# Information technologies

## SENSORS



Fuelled by information,  
Hexagon's information  
technologies are a driving  
force behind many of the  
transformative solutions  
shaping our future

## SOFTWARE



# Hexagon's primary divisions

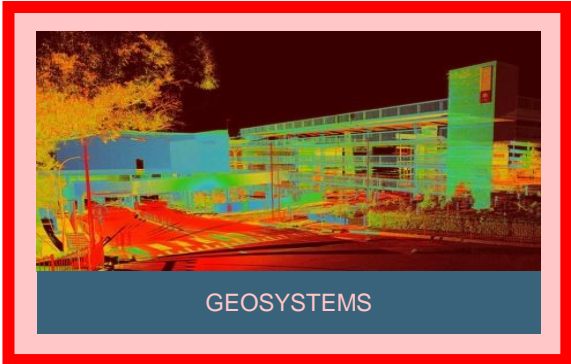
Our divisions serve three primary landscapes – manufacturing, engineering and geospatial. Each is committed to pioneering innovations in business processes, value chains and information exchange.



AGRICULTURE



GEOSPATIAL



GEOSYSTEMS



MANUFACTURING INTELLIGENCE



MINING



POSITIONING INTELLIGENCE



PROCESS, POWER & MARINE



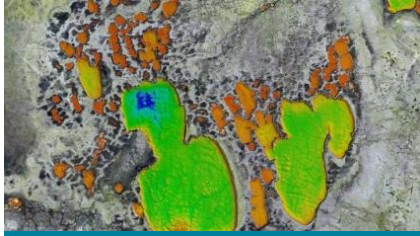
SAFETY & INFRASTRUCTURE



**HEXAGON**  
GEOSYSTEMS

*Leica*  
*Geosystems*

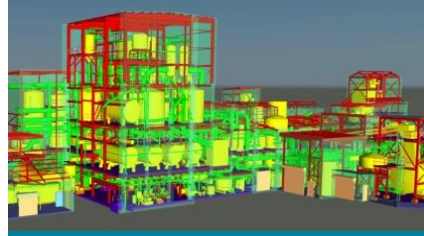
# Segments



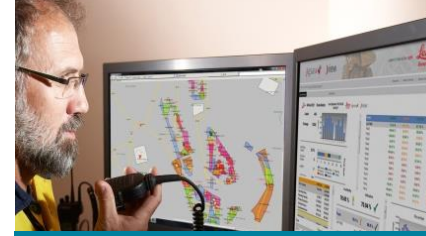
REALITY CAPTURE



PUBLIC SAFETY



POWER & PLANT



MINING



SCIENCE & EDUCATION



SURVEYING & ENGINEERING



HEAVY CONSTRUCTION



MONITORING



AGRICULTURE



SPORTS & ENTERTAINMENT



BUILDING



TRANSPORTATION



UTILITIES



NATURAL RESOURCES



PRECISE POSITIONING

# Powerhouse of innovation

## Solutions to shape smart change:



First total station with integrated GPS – **Leica SmartStation**



First **High-Precision Total Station** – **Leica TS30**



**Leica Viva** – the most versatile surveying system



**Leica Viva TS15** – the fastest Imaging Total Station



**Leica ScanStation P20** – first 3D laser scanner with WFD technology



**Aibotix X6** – UAV for surveying, industrial inspection, agriculture and forestry.



**Leica Pegasus Backpack** – the first Mobile Mapping Backpack



First future proof **GNSS-System** – **Leica GPS1200**



**Leica ScanStation C10** – the All-in-One 3D Laser Scanner



**Leica RCD30** – the first multispectral airborne camera for LiDAR and UAV



**Leica ALS70** – the first airborne laser scanner with 500 KHz puls rate



**Leica Nova MS50** – the first MultiStation (GNSS, TPS, Imaging, Scanning)



**Leica DMC III** – the most productive Large Format Camera workflow ever



**Leica BLK 360** – World's smallest and lightest imaging laser scanner.

2005

2008

2009

2010

2011

2012

2013

2014

2015

2016



# Geospatial Solutions Division (GSD) – Reality Capture

AIRBORNE  
TOPO + BATHY  
LiDAR



AIRBORNE  
IMAGING + HYBRID  
SENSORS



UAV  
MAPPING  
SOLUTIONS



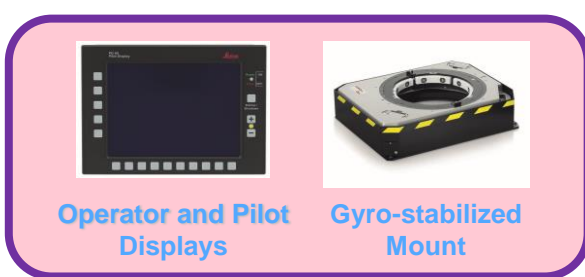
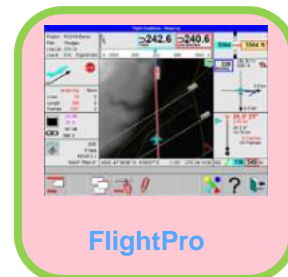
MOBILE  
SENSOR  
PLATFORMS



- when it has to be **right**



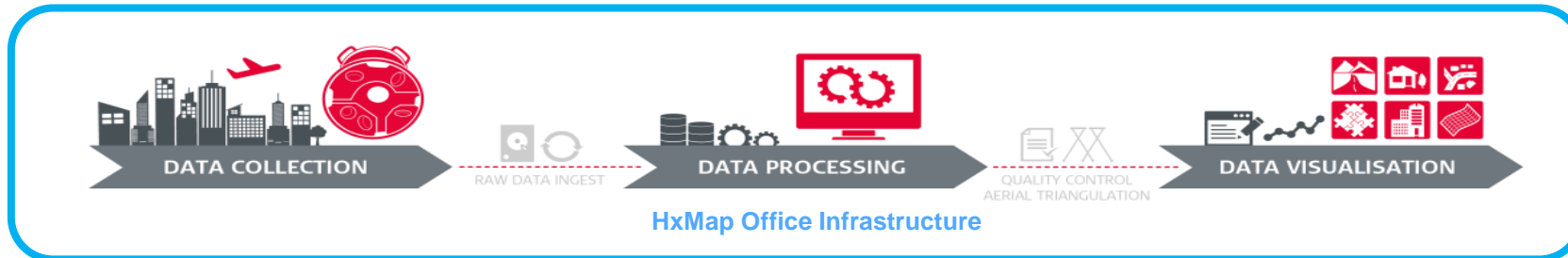
# GSD Airborne Solutions – Common Aircraft Infrastructure



**Airborne Imaging**  
Superior Digital Imaging Technology

**Common Peripherals and Comprehensive Airborne Software**

**Airborne LIDAR**  
Best-in-Class LiDAR Technology

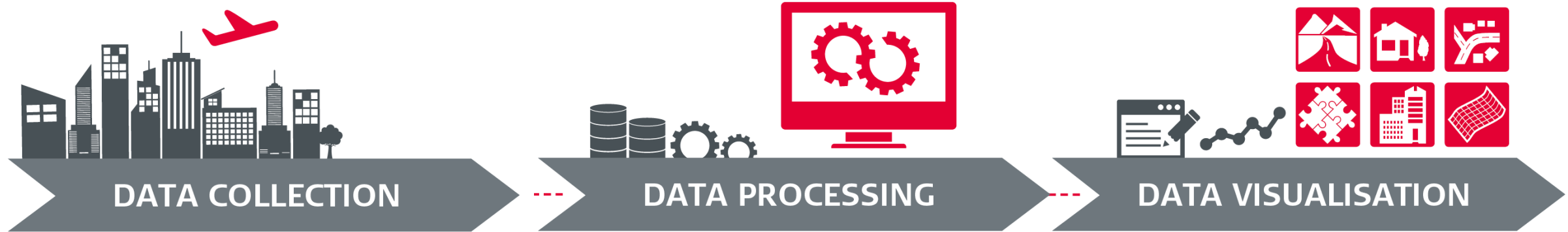


**Common workflow solutions**  
RealWorld – RealCity – RealTerrain

- when it has to be **right**



# GSD – Reality Capture / Common Office Infrastructure



RealWorld

## Wide area ORTHO mapping

- DMC3
- ADS100/120

• **Used by HxIP!**



RealCity

## 3D SMART CITIES

- RCD30 Oblique
- CityMapper
- DMC3



RealTerrain

## Wide area LiDAR Surveying

- SPL100
- ALS80

• **Used by HxEP!**

# Leica RealWorld - Airborne reality capture for large areas



**HxMap Software**

**ADS100**  
65/120 mm optics

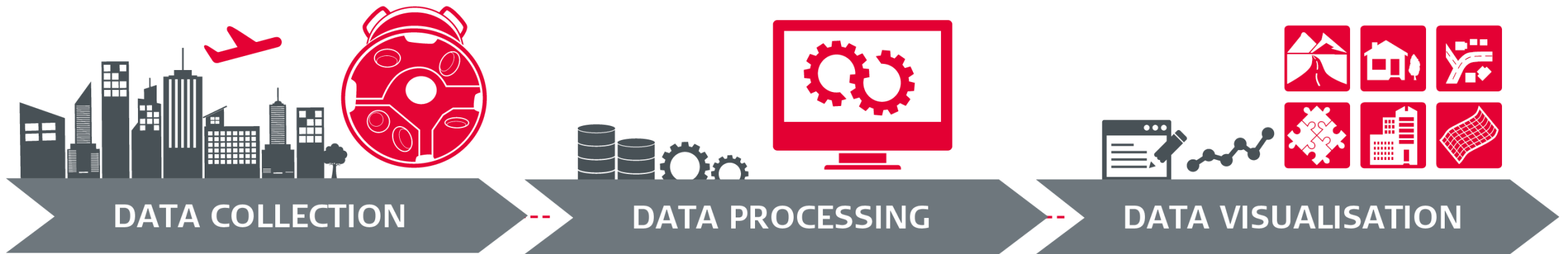


**DMC III**

- when it has to be **right**



# Leica RealCity - Airborne reality capture for smart cities



**CityMapper**  
Nadir & Oblique cameras  
plus Hyperion Lidar

**HxMap Software**

- when it has to be **right**





# Leica RealTerrain – Airborne reality capture for large elevation programs



**HxMap Software**



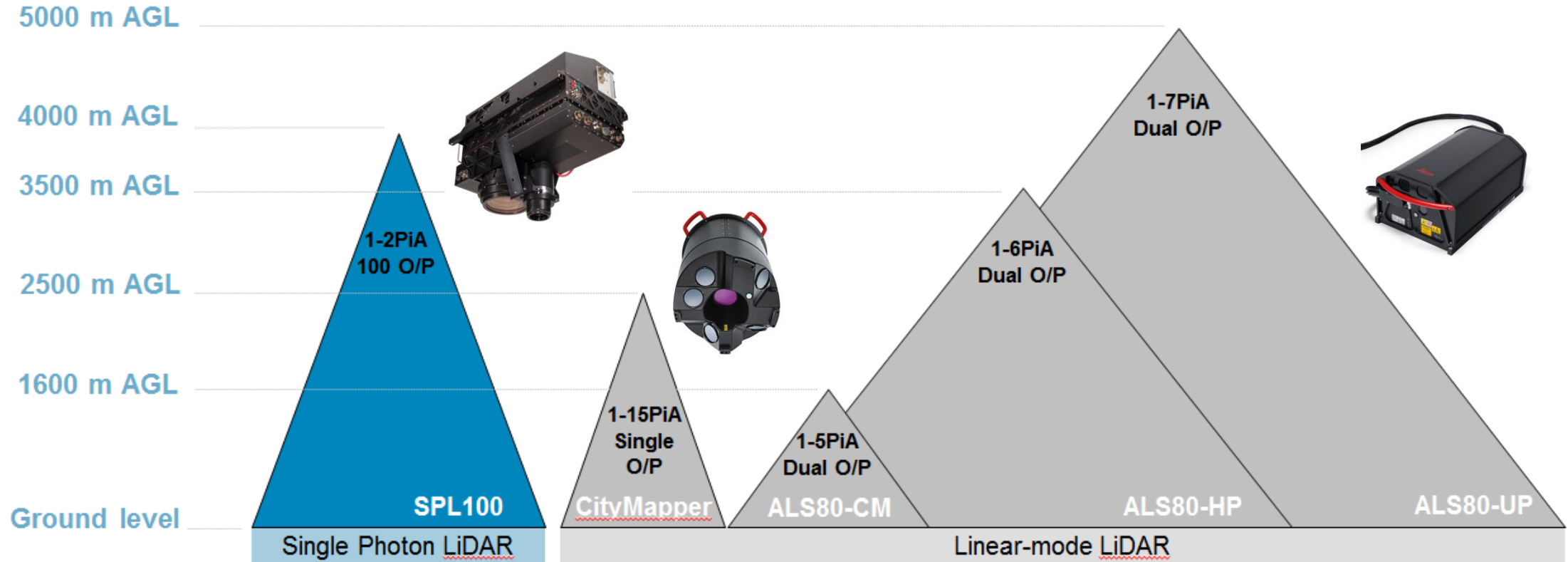
**SPL100**  
Single Photon Lidar

**ALS 80**  
Linear Lidar

- when it has to be **right**



# Leica Topographic LiDAR Products – where do they fit in ?



Points/m<sup>2</sup>  
@ 200 kts  
Point spacing  
in cm

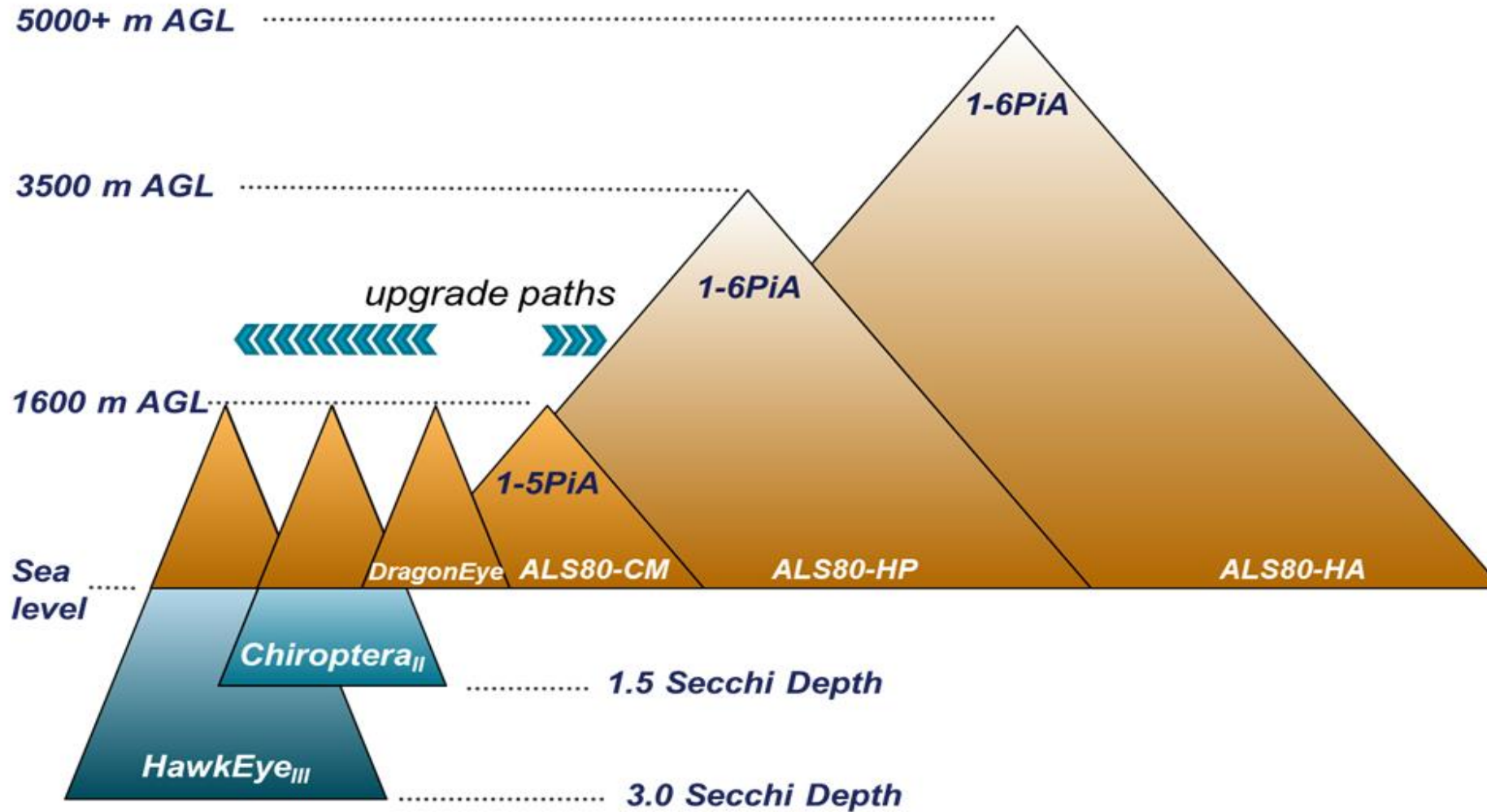
- when it has to be **right**

# Color by elevation





# Topo & Complementary Bathy-LiDAR Product Portfolio

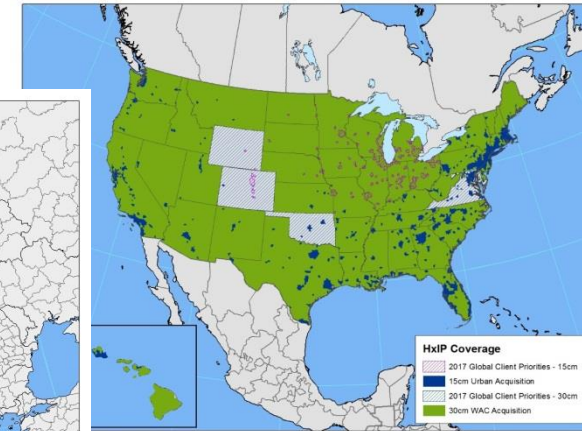
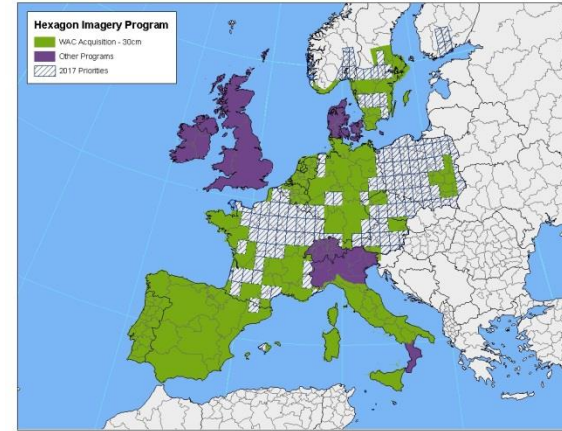


- when it has to be right

# Hexagon Content Program Business (HxCP)

## Hexagon Imagery Program (HxIP)

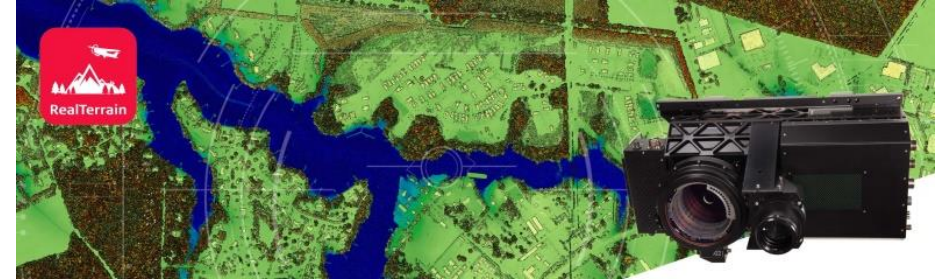
- Started in 2014
- Delivery of **Precision Imagery for Professionals** via a licensed data model
- Data Production in cooperation with Leica customer base
- WMS (streaming) service for users or delivery of 'hardcopy' pixels
- Covers North America and Europe
  - 7,889,926km<sup>2</sup> Wide Area Coverage (WAC) – 30cm delivered
  - 220,935km<sup>2</sup> Urban Areas (UA) – 15cm delivered



# Hexagon Content Program Business (HxCP)

## Hexagon Elevation Program (HxEP)

- Started in 2016
- Delivery of **Precision Elevation Data for Professionals** via a licensed data model
- Initial HxEP target market - North America
- Leverage of the newly introduced Single Photon LiDAR technology from Sigma Space
  - Real Terrain offering under Leica Geosystems brand
  - SPL100 sensor system + HxMap workflow
  - First pathfinder programs started in the U.S. to mature sensor and production workflow
  - Seed market for new business model approach to elevation content
  - System sales in international markets that are not on the HxCP road map



# Hexagon M3D Solutions



reddot award 2016  
winner



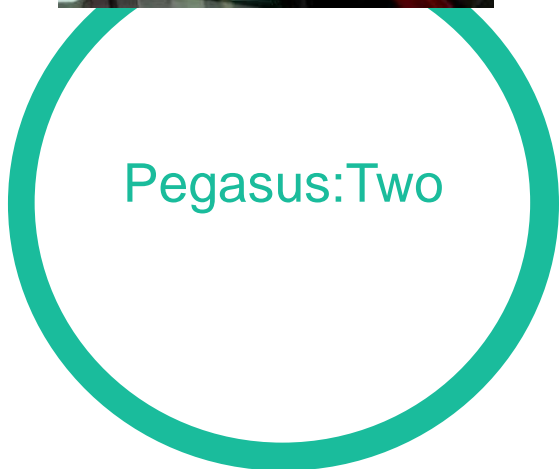
Pegasus:Stream



Pegasus:Backpack



SiTrack:One



Pegasus:Two



- when it has to be **right**



# Hexagon UAV Strategy – Success through Co-operation

*Leica*  
*Geosystems*



 **AIBOTIX**



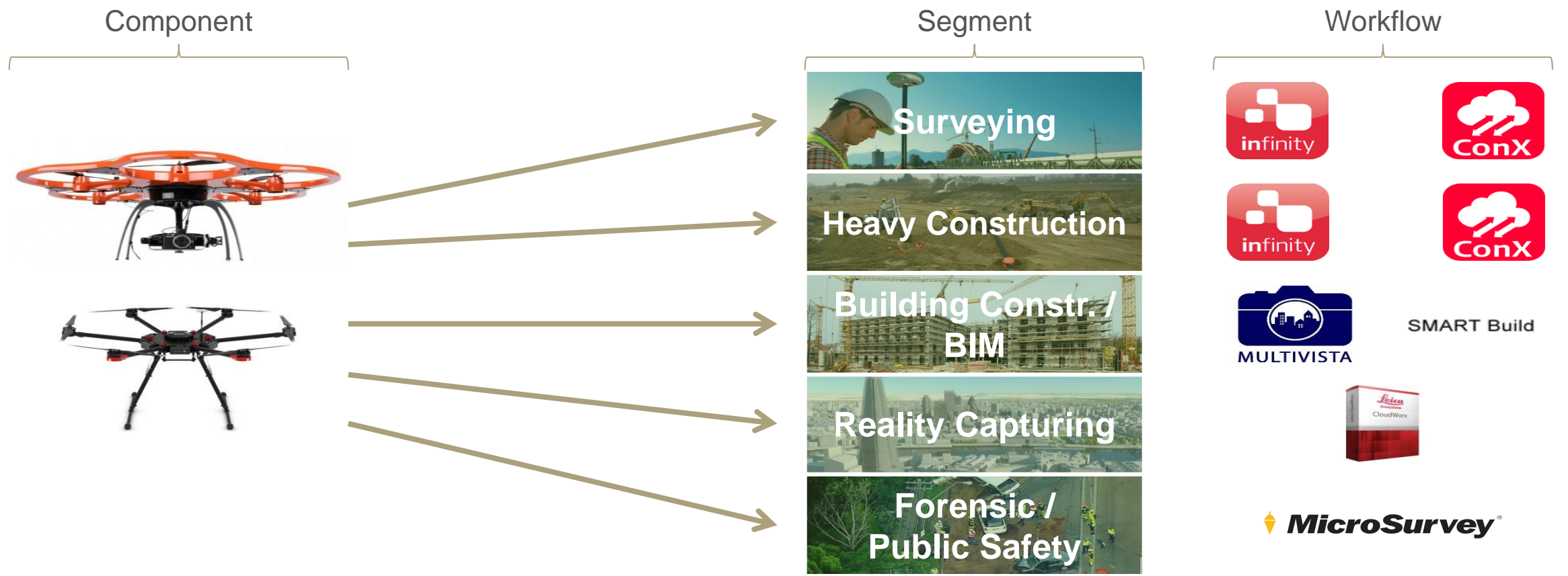
**dji**



- when it has to be **right**

*Leica*  
*Geosystems*

# VTOL Solutions – From component to workflow .. depending on applications



- when it has to be right



**“WE CAN’T SOLVE  
TODAY’S PROBLEMS  
WITH YESTERDAY’S  
TECHNOLOGIES**

– Ola Rollén



*Thanks for your attention!*

- when it has to be **right**

**Leica**  
Geosystems