

***Flujo de trabajo completo:  
UX5, UAS Master y  
eCognition.  
Otros ejemplos.***

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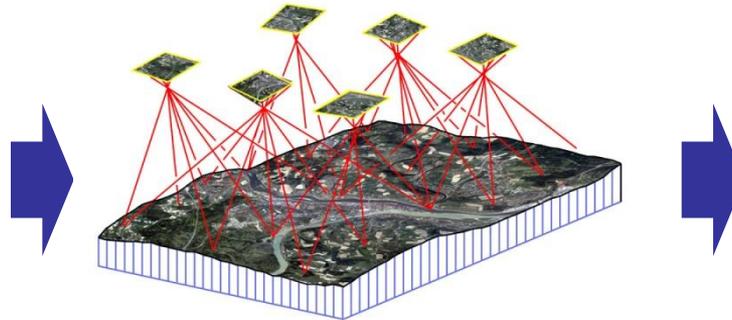
**Responsable de Aplicaciones  
Fotogramétricas en GTBI**

## UX5



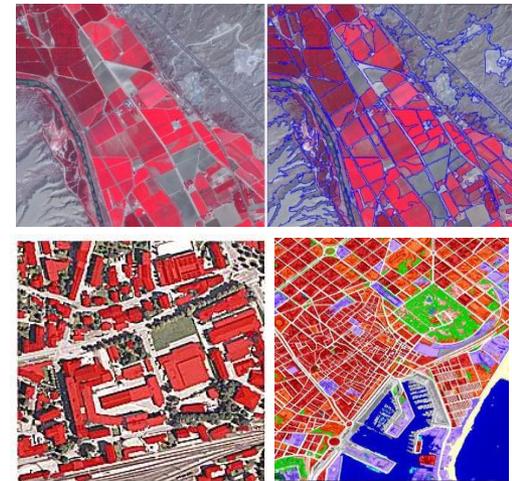
Vuelo

## UAS Master



Procesos  
Fotogramétricos

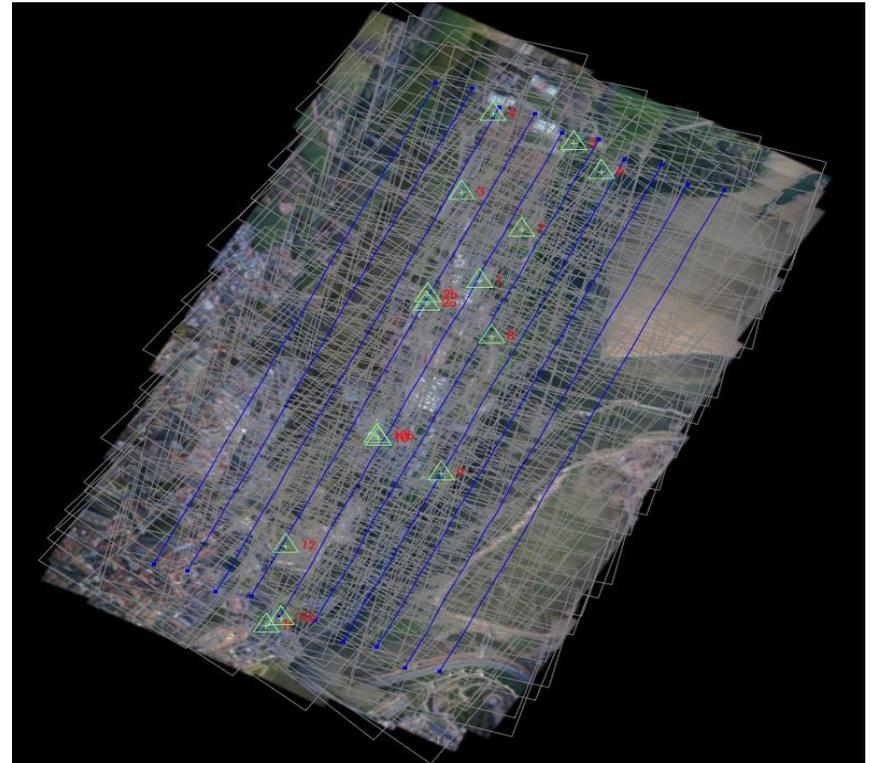
## eCognition



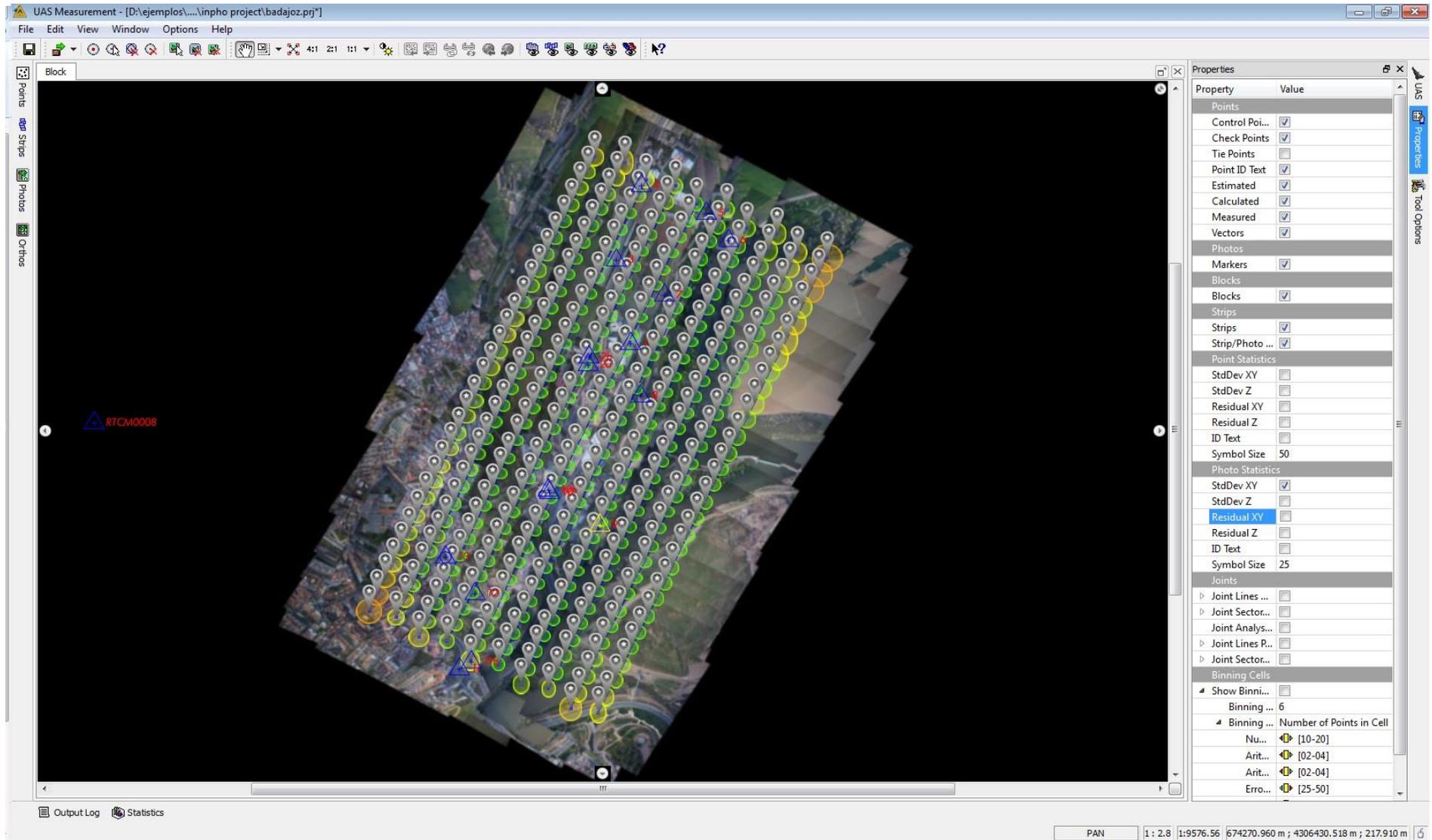
Explotación

## • Características del vuelo

- Altura sobre el terreno: 300 m
- Tamaño de pixel: 4,75 micras – 10 cm
- Superficie: 1300 m x 2100 m
- Número de fotos: 290
- Puntos de control: 17
- Cámara: focal 15 mm
- Densidad nube de puntos: 30 cm
- Número de puntos: 31 Millones



# Flujo de trabajo completo. UAS Master



The screenshot displays the UAS Master software interface. The main window shows a 3D perspective view of a flight plan over an aerial photograph. The flight plan consists of a grid of points, with some points highlighted in green and yellow. A red triangle marker is labeled "RTCM0008". The interface includes a menu bar (File, Edit, View, Window, Options, Help), a toolbar, and a Properties panel on the right. The Properties panel is currently set to "Point Statistics" and shows various options for displaying point data.

Property	Value
Points	
Control Poi...	<input checked="" type="checkbox"/>
Check Points	<input checked="" type="checkbox"/>
Tie Points	<input type="checkbox"/>
Point ID Text	<input checked="" type="checkbox"/>
Estimated	<input checked="" type="checkbox"/>
Calculated	<input checked="" type="checkbox"/>
Measured	<input checked="" type="checkbox"/>
Vectors	<input checked="" type="checkbox"/>
Photos	
Markers	<input checked="" type="checkbox"/>
Blocks	
Blocks	<input checked="" type="checkbox"/>
Strips	
Strips	<input checked="" type="checkbox"/>
Strip/Photo ...	<input checked="" type="checkbox"/>
Point Statistics	
StdDev XY	<input type="checkbox"/>
StdDev Z	<input type="checkbox"/>
Residual XY	<input type="checkbox"/>
Residual Z	<input type="checkbox"/>
ID Text	<input type="checkbox"/>
Symbol Size	50
Photo Statistics	
StdDev XY	<input checked="" type="checkbox"/>
StdDev Z	<input type="checkbox"/>
Residual XY	<input checked="" type="checkbox"/>
Residual Z	<input type="checkbox"/>
ID Text	<input type="checkbox"/>
Symbol Size	25
Joints	
Joint Lines ...	<input type="checkbox"/>
Joint Sector...	<input type="checkbox"/>
Joint Analys...	<input type="checkbox"/>
Joint Lines P...	<input type="checkbox"/>
Joint Sector...	<input type="checkbox"/>
Binning Cells	
Show Binni...	<input type="checkbox"/>
Binning ...	6
Binning ...	Number of Points in Cell
Nu...	[10-20]
Arit...	[02-04]
Arit...	[02-04]
Erro...	[25-50]

- Precisiones AT

Overall statistics on complete block:

RMS all points / all models	0.085	0.062	0.143
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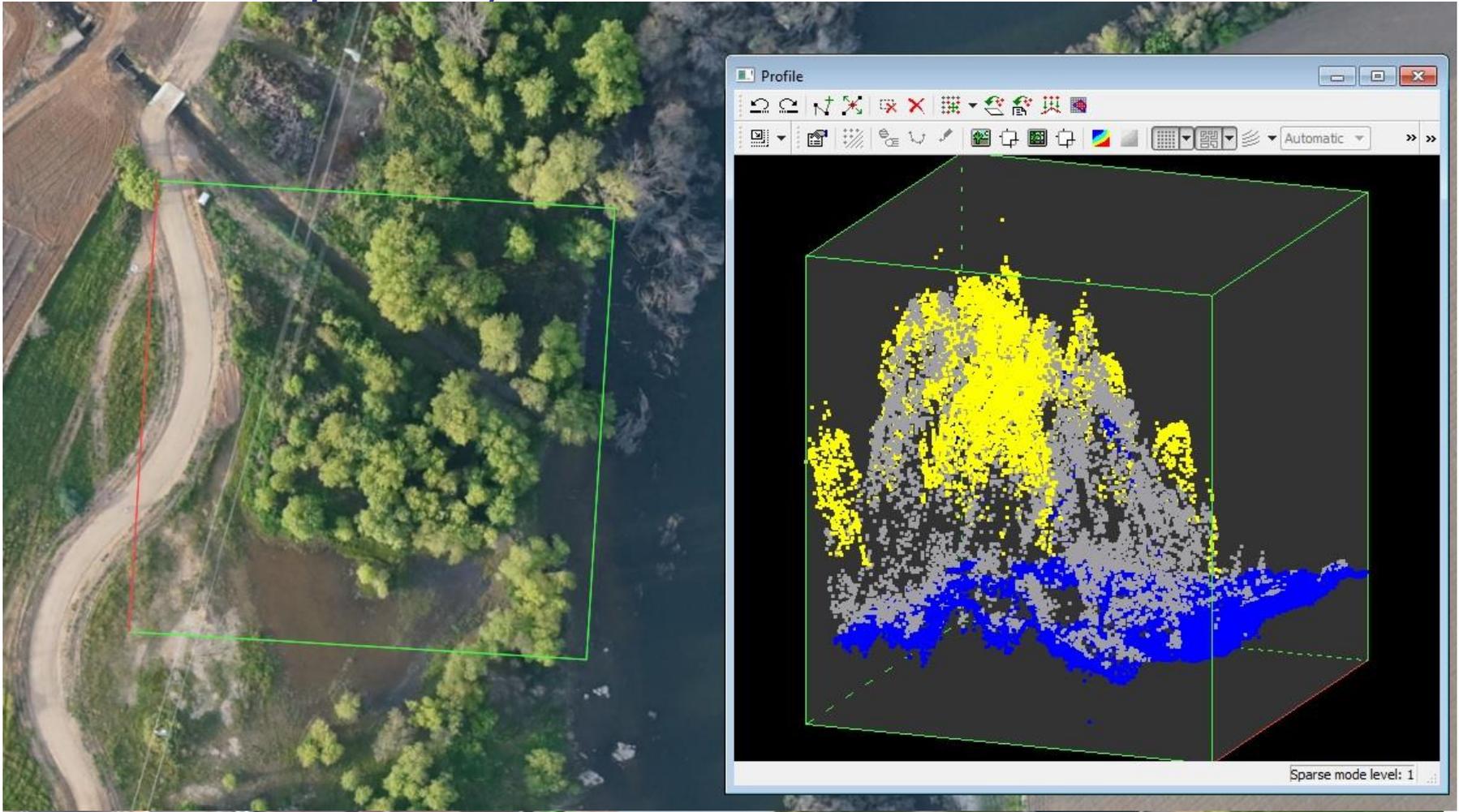
(for 202 HV and CHV intersections)

- Precisiones AT

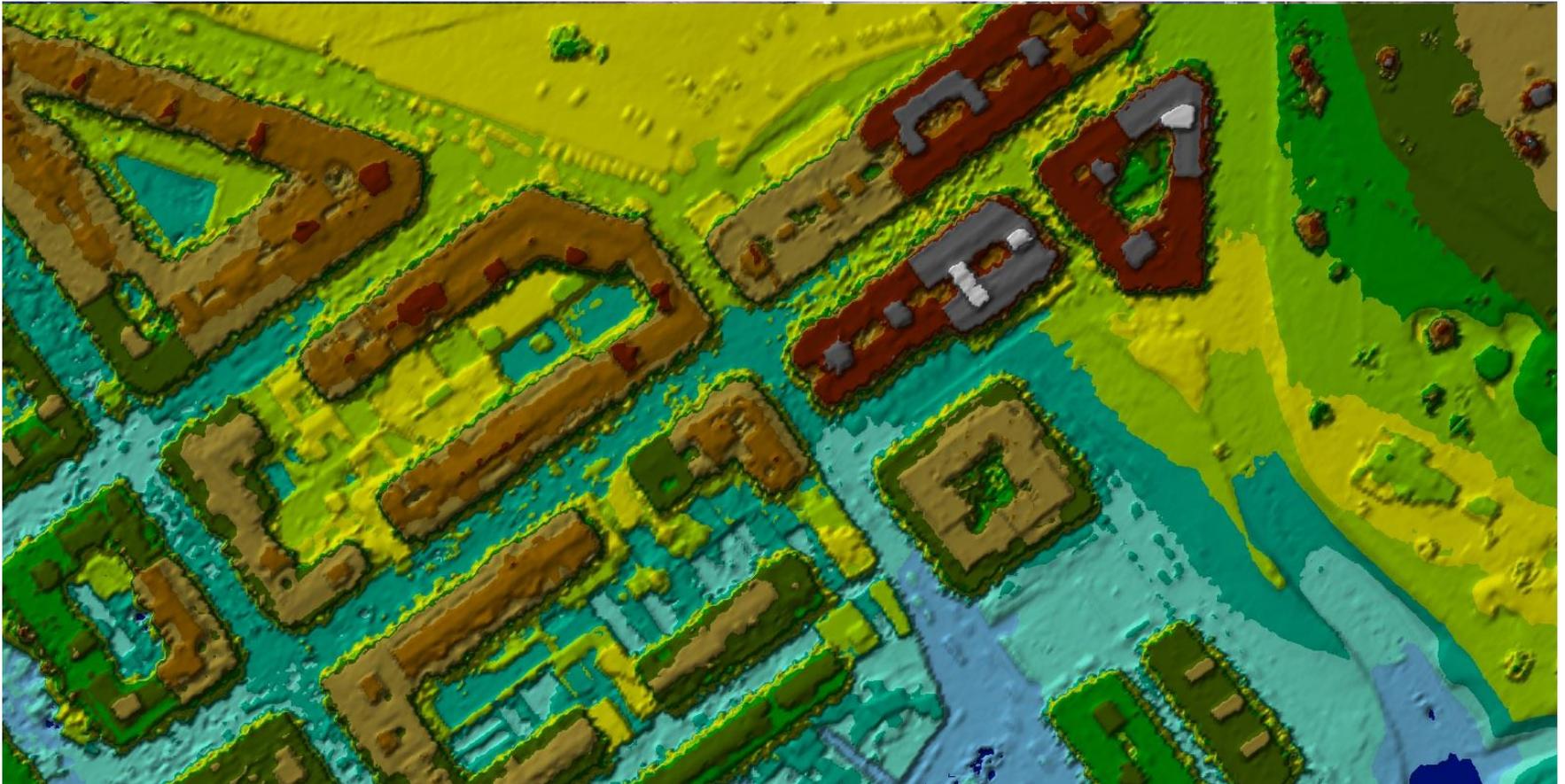
3	HV							
	DSC07715	DSC07717	-0.046	0.008	0.047	-0.017	2.5	
	DSC07715	DSC07718	-0.069	0.014	0.071	-0.029	1.6	
	DSC07715	DSC07719	-0.022	0.006	0.023	0.007	1.2	
	DSC07716	DSC07717	-0.033	0.002	0.033	-0.030	5.2 !!!	
	DSC07716	DSC07718	-0.053	0.010	0.054	-0.036	2.5	
	DSC07716	DSC07719	-0.002	-0.007	0.007	0.012	1.7	
	DSC07717	DSC07718	-0.039	0.005	0.039	-0.039	4.8 !!!	
	DSC07717	DSC07719	0.019	-0.027	0.033	0.030	2.5	
	DSC07718	DSC07719	0.026	-0.074	0.078	0.119	5.2 !!!	
	DSC07762	DSC07763	0.064	-0.020	0.067	-0.026	5.4 !!!	
	DSC07762	DSC07764	0.077	-0.029	0.082	-0.020	2.5	
	DSC07762	DSC07765	0.068	-0.006	0.068	-0.064	1.7	
	DSC07762	DSC07766	0.053	0.018	0.056	-0.105	1.3	
	DSC07763	DSC07764	0.063	-0.022	0.067	-0.017	4.7 !!!	
	DSC07763	DSC07765	0.048	-0.001	0.048	-0.082	2.4	
	DSC07763	DSC07766	0.030	0.019	0.035	-0.130	1.6	
	DSC07764	DSC07765	0.039	-0.014	0.041	-0.155	5.1 !!!	
	DSC07764	DSC07766	0.018	-0.005	0.019	-0.191	2.5	
	DSC07765	DSC07766	-0.003	-0.012	0.012	-0.228	4.9 !!!	
	DSC07773	DSC07774	0.035	0.001	0.035	-0.117	5.2 !!!	
	DSC07773	DSC07775	0.058	0.017	0.061	-0.045	2.5	
	DSC07773	DSC07776	0.069	0.026	0.073	-0.007	1.7	
	DSC07773	DSC07777	0.025	0.030	0.039	-0.050	1.3	
	DSC07774	DSC07775	0.046	0.018	0.049	0.025	4.7 !!!	
	DSC07774	DSC07776	0.053	0.018	0.056	0.047	2.5	
	DSC07774	DSC07777	0.014	0.024	0.028	-0.029	1.7	
	DSC07775	DSC07776	0.068	0.003	0.068	0.073	5.1 !!!	
	DSC07775	DSC07777	0.042	0.025	0.049	-0.055	2.6	
	DSC07776	DSC07777	0.086	0.069	0.111	-0.182	5.1 !!!	

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**I: RMS all models 0.066 0.029 0.072 0.110**

- Nube de puntos y ortofoto final



- Nube de puntos y ortofoto final (Zona Urbana)

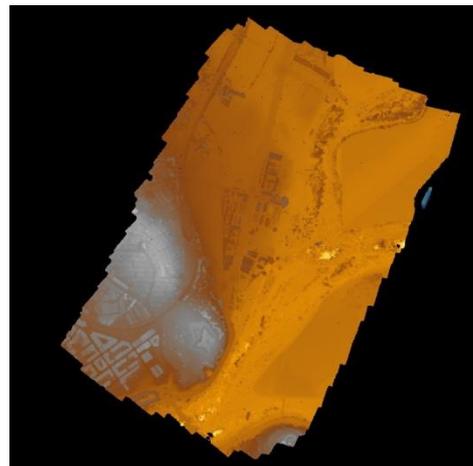


- Nuevo Visualizador





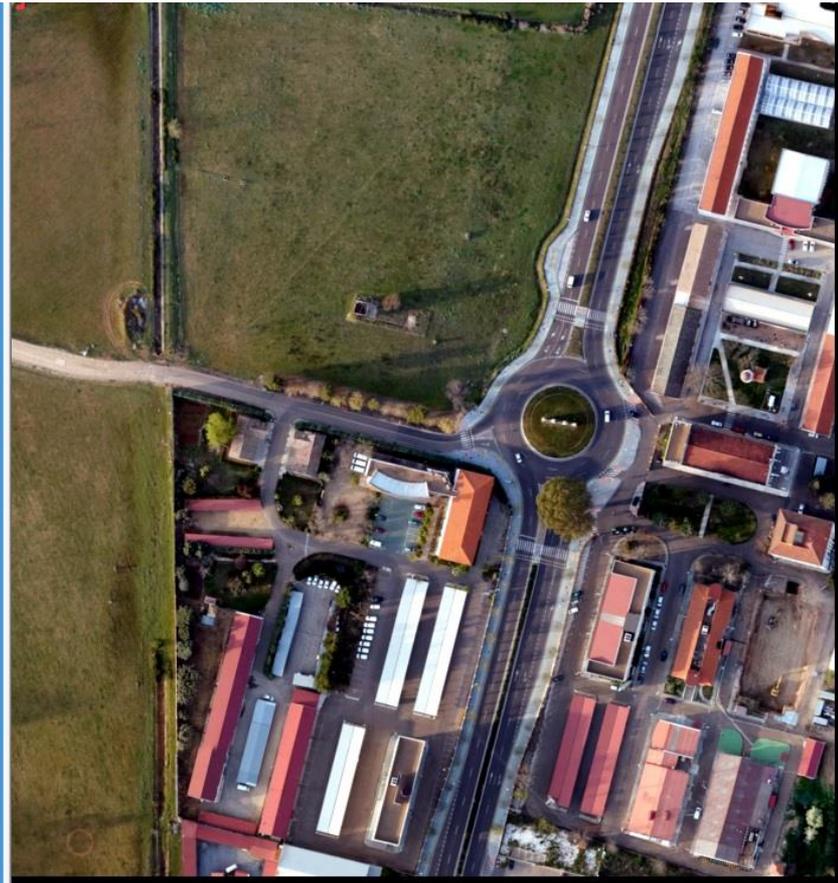
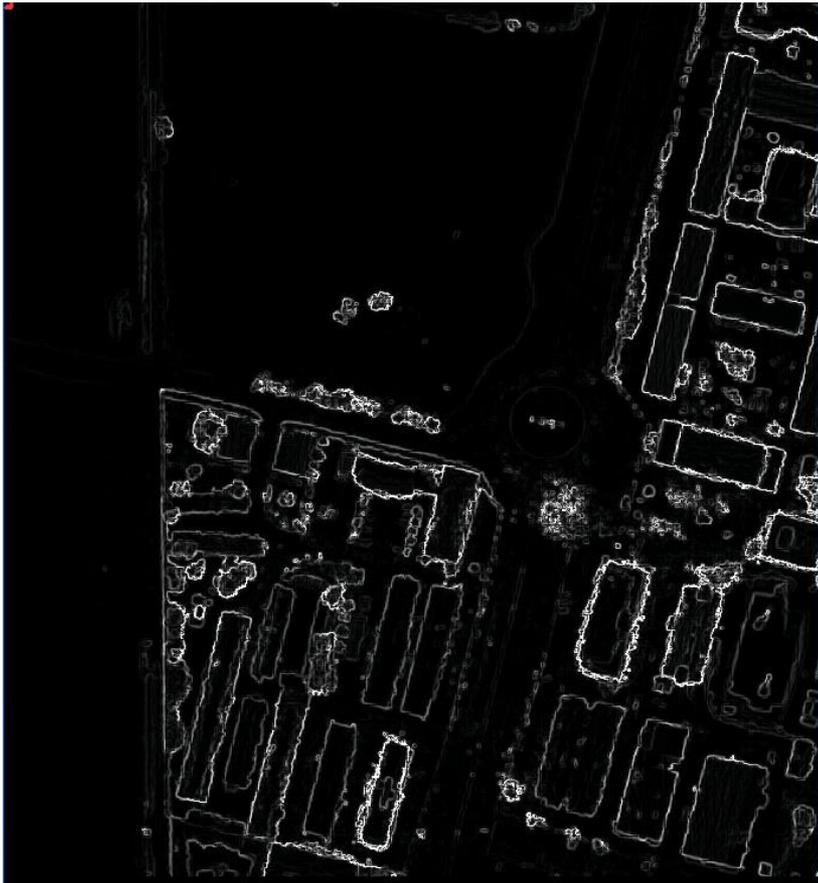
Nube de puntos



- **Proceso**

1. *Calculo de pendientes*
2. *Segmentación (Contrast-Split segmentation)*
3. *Detección vegetación*
  - *Índice ( $GREEN / (RED + GREEN + BLUE)$ ) y Desv. Pendientes*
4. *Detección suelo*
  - *10% de puntos mas bajos*
5. *Detección Edificios*
  - *Diferencia con respecto al suelo*
6. *Eliminación suelo*

## Cálculo de pendientes



## Contrast Split Segmentation



## Detección Vegetación



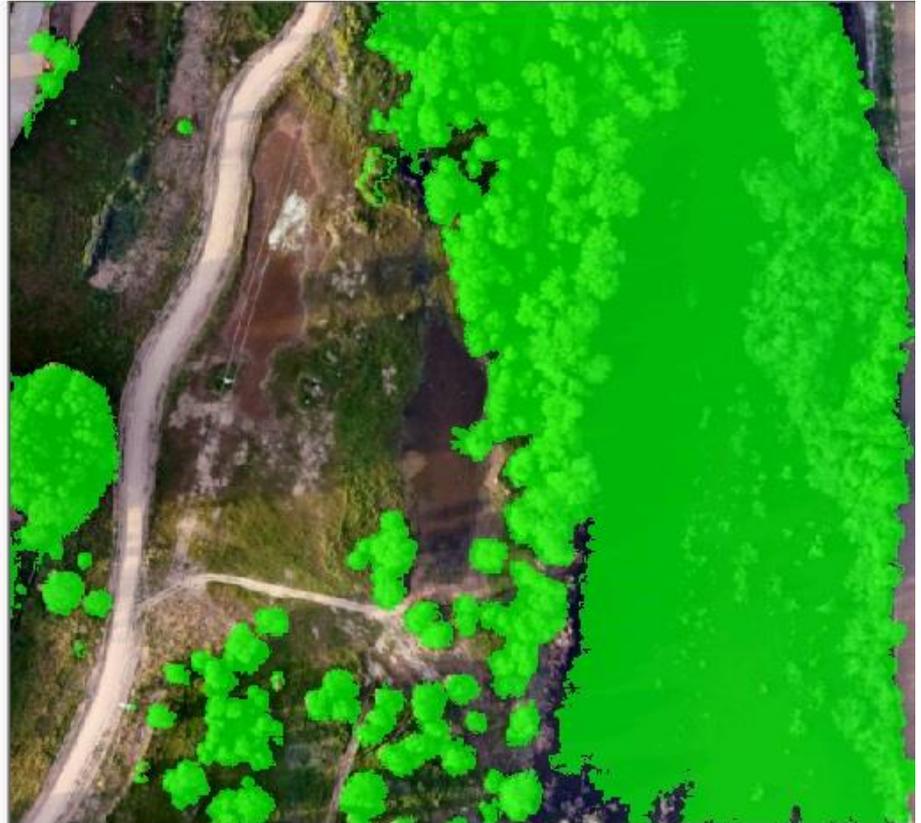
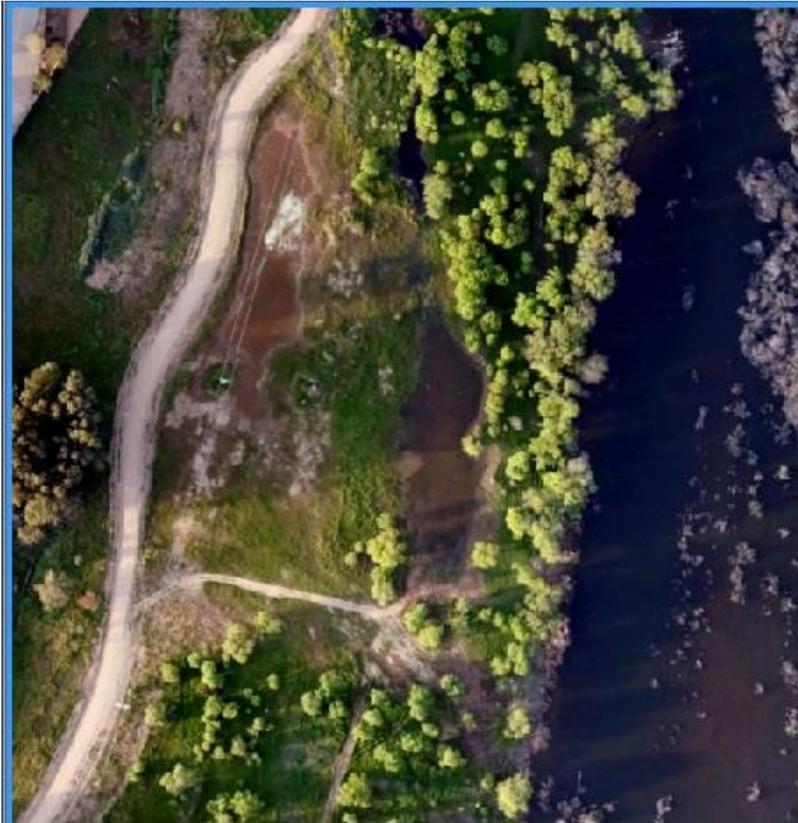
## Detección Suelo



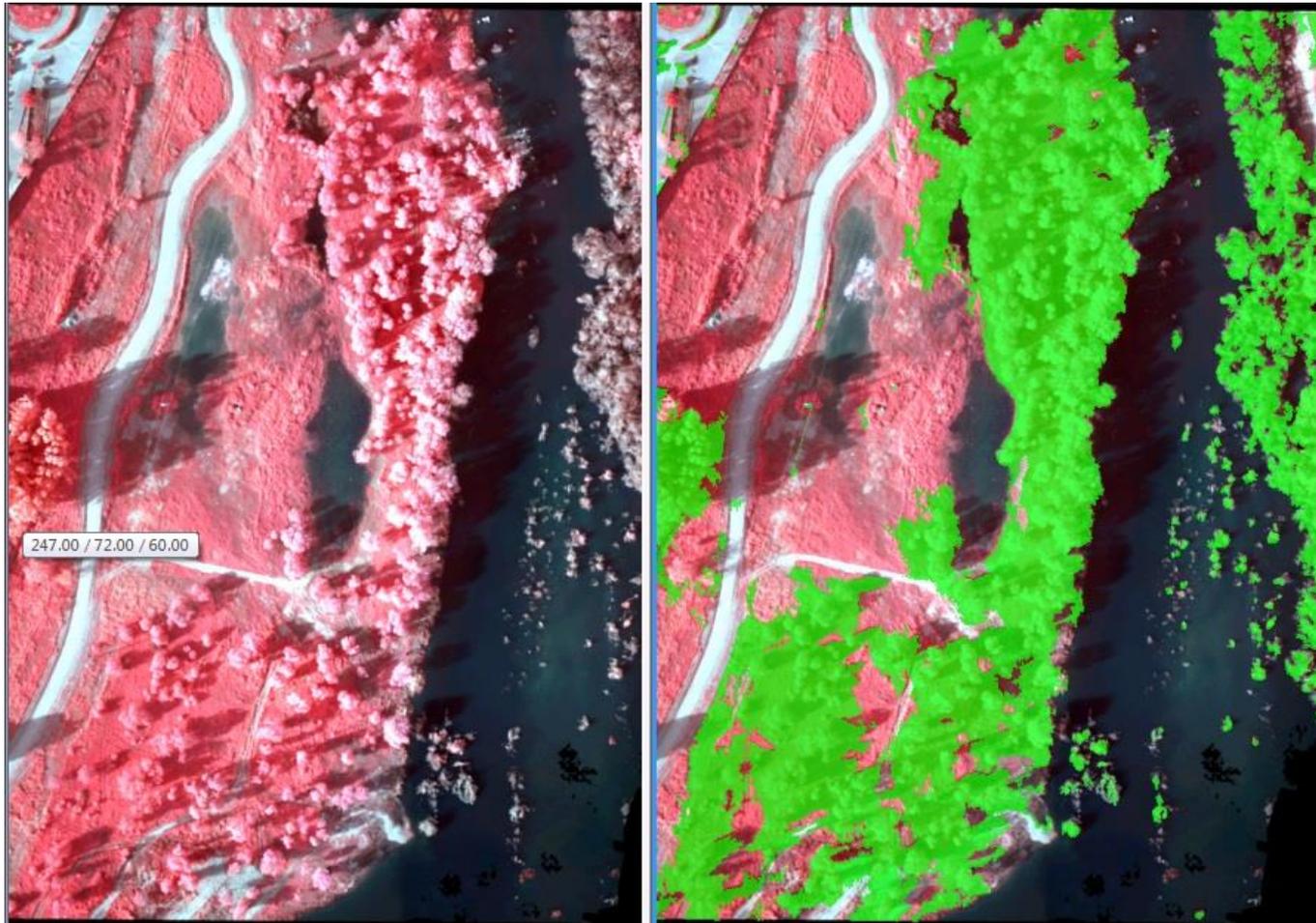
## DetECCIÓN Edificios – Resultado Final



## Problema en el agua



## Solución con el canal Infrarojo

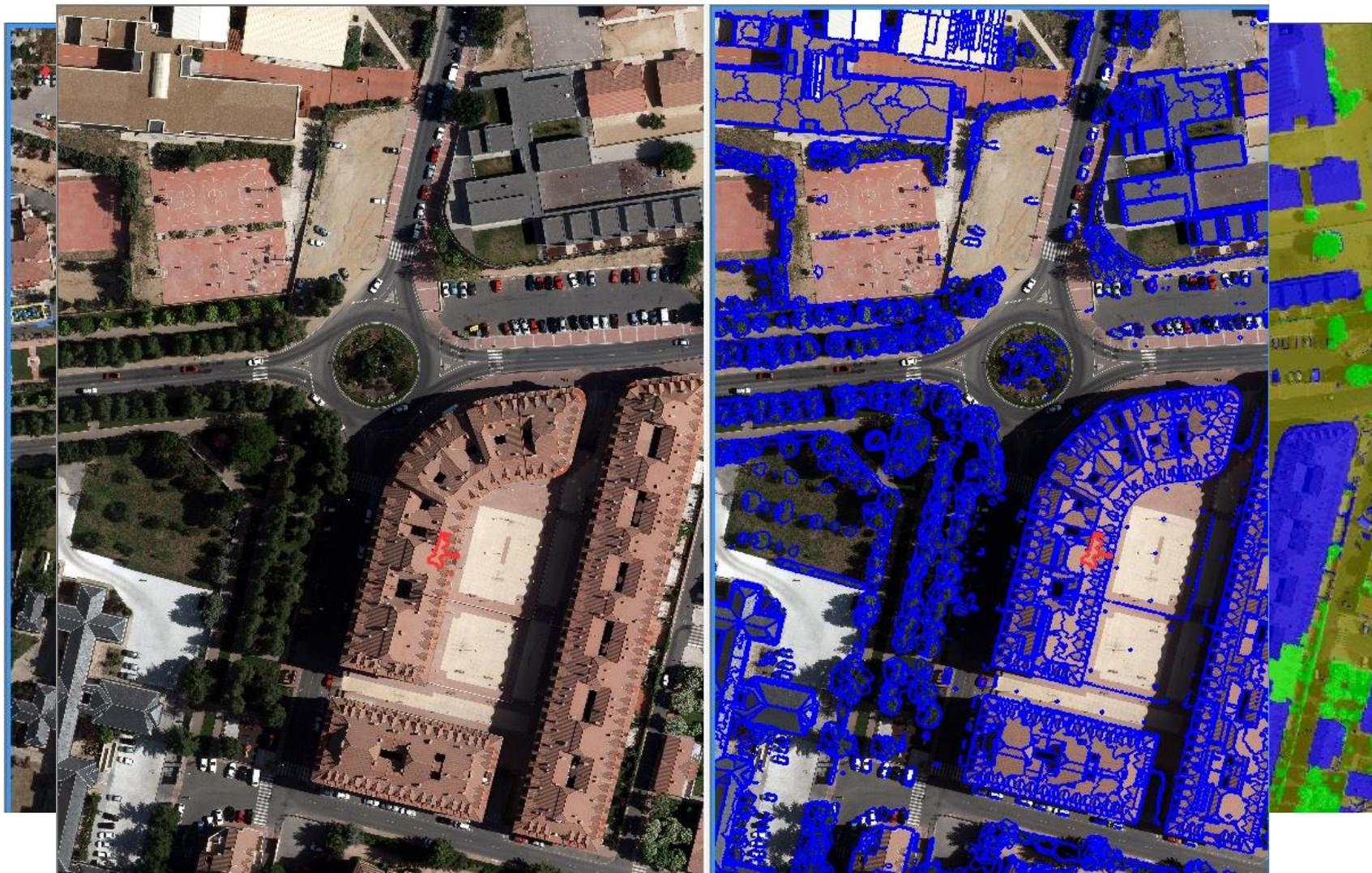


## UX5: Ortofoto 10 cm + nube puntos 30 cm



# Otros Ejemplos

**UltraCam: Ortofoto real RGBI 10 cm + nube puntos 10 cm**



## UltraCam: Ortofoto real RGBI 10 cm + nube puntos correlada 10 cm + nube de puntos LiDAR 50 cm



Edificios Nuevos

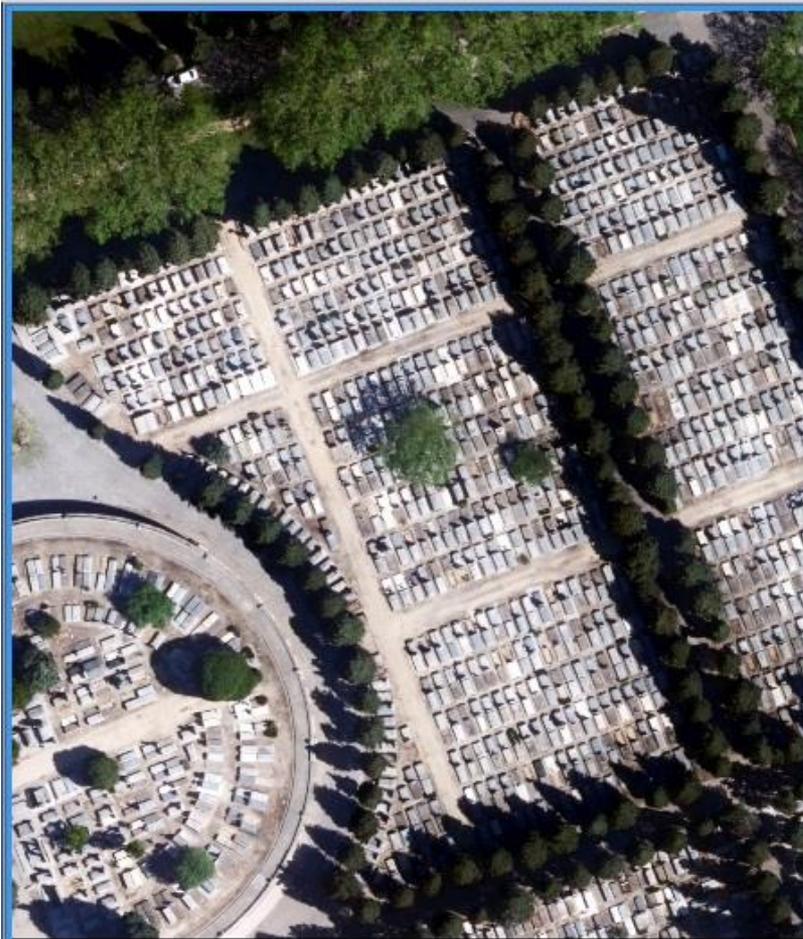
## UltraCam: Ortofoto real RGBI 10 cm + nube puntos correlada 10 cm + nube de puntos LiDAR 50 cm



## UltraCam: Ortofoto real RGBI 10 cm + nube puntos correlada 10 cm + nube de puntos LiDAR 50 cm

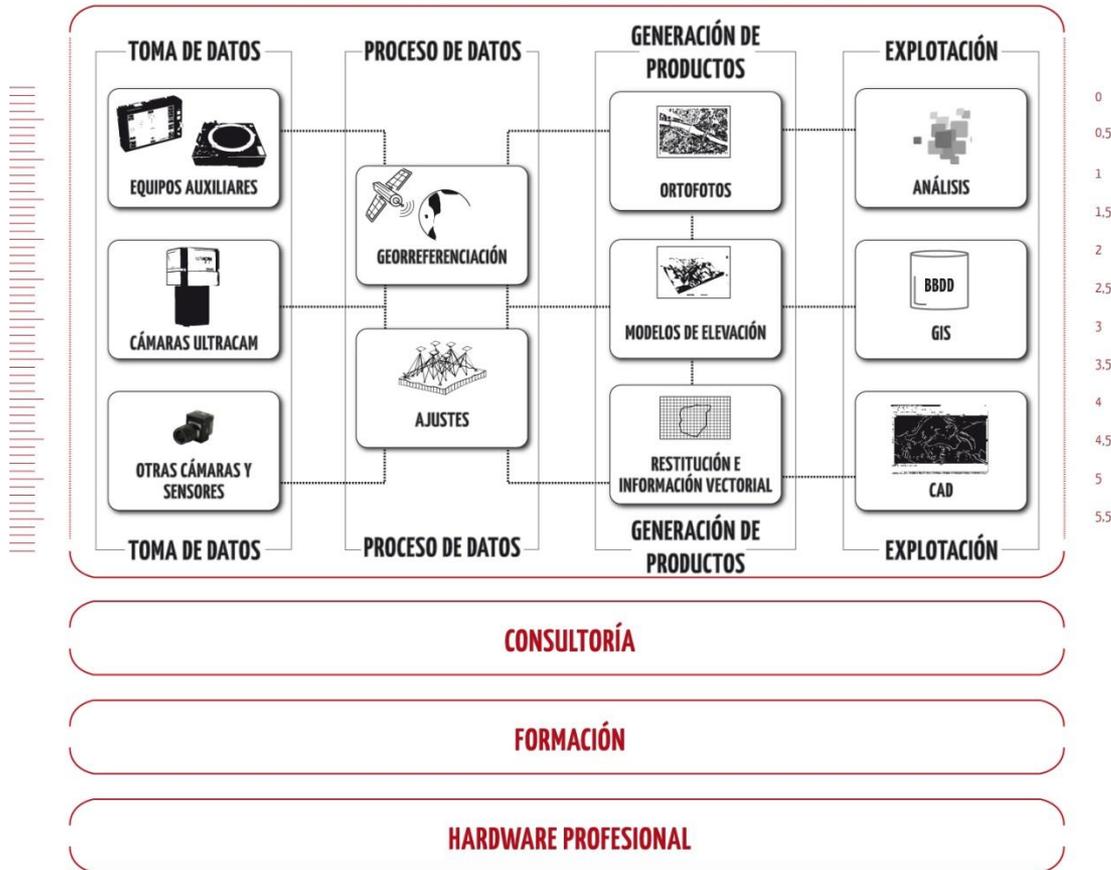


## UltraCam: Ortofoto real RGBI 10 cm



# ¡GRACIAS POR SU ATENCIÓN!

## PROCESOS Y SOLUCIONES INTEGRALES DE FOTOGRAMETRÍA



# ¿Preguntas?