

GEO DRONE 3D

CENTRE DES MONUMENTS NATIONAUX

Numérisation du couvent franciscain de Saorge



# LE PROJET

**Une semaine de relevés pour réaliser un jumeau numérique**

- **Numérisation de l'extérieur** par photogrammétrie et lasergrammétrie
- **Numérisation de l'intérieur** de certaines pièces par lasergrammétrie et photogrammétrie partielle
- **Géoréférencement** des numérisations
- **Plans 2D/3D**



**Technologies**

**Photogrammétrie**

**Terrestre**



**Scanners Laser**



**Photogrammétrie  
aérienne**



GEO DRONE 3D

An aerial photograph of the Monastère de Saorge, a medieval abbey located in the Alpes-Maritimes region of France. The abbey is built into a rocky cliff face, with its stone walls and tiled roofs contrasting against the surrounding greenery and the rugged, light-colored mountains in the background. A small town is visible at the base of the hill. The sky is clear and blue.

Numérisation 3D du  
**MONASTÈRE DE SAORGE**

# PLANIFICATION RIGOUREUSE

Zones \ To Do	Code	Priorité	LG	PG Sol	PG Air	Autre	Remarque
<b>Extérieur</b>							
Accès & Ouest	EXT_WST	Indispensable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			vendredi matin
Jardin Sud	EXT_STH	Indispensable	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		
Chemin Nord	EXT_NTH	Indispensable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		vendredi matin
<b>Jardin Est:</b>							
Terrasse N-2	EXT_JRD	Indispensable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		à relier avec jardin sud
Terrasse N-1	EXT_JRD	Indispensable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		focus sur arcades
Terrasse N0	EXT_JRD	Indispensable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Terrasse N+1	EXT_JRD	Indispensable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Terrasse N+2	EXT_JRD	Indispensable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Terrasse N+3	EXT_JRD	Indispensable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		a relier avec chemin nord
Allée de déambulation Nord	EXT_JRD	Indispensable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Allée de déambulation Sud	EXT_JRD	Indispensable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Façade Ouest	EXT_WST	Indispensable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Façade Nord	EXT_NTH	Indispensable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Façade Sud	EXT_STH	Indispensable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Façade Est	EXT_EST	Indispensable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Clocher	EXT_TWR	Indispensable	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		
Balcon	EXT_BAL	Bonus	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Cloître	INT_CTR	Indispensable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<b>RDC</b>							
Nef	INT_NEF	Indispensable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Choeur	INT_CHR	Indispensable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Sacristie	INT_SAC	Indispensable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Une cellule	INT_CTR	A faire	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Accueil/Boutique	INT_ACC	A faire	<input checked="" type="checkbox"/>				
Bureau		Bonus	<input type="checkbox"/>				
Réserves		Bonus	<input type="checkbox"/>				
Réfectoire	INT_EST	Bonus	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Cuisine	INT_EST	Bonus	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Couloir Aile EST	INT_EST	A faire	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Autres cellules		Bonus	<input type="checkbox"/>				
<b>R+1</b>							
Galerie	INT_ET1	Indispensable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		faire + de photos couloir, notamment sol
Cellule	INT_ET1	A faire	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Autres cellules		Bonus	<input type="checkbox"/>				
Bibliothèque	INT_ET1	Bonus	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Bureau		Bonus	<input type="checkbox"/>				
Réserve		Bonus	<input type="checkbox"/>				
Salon	INT_ET1	Bonus	<input checked="" type="checkbox"/>				
<b>Autre</b>							
Bergerie	OTH_BGR	Indispensable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Buanderie	OTH_BUA	Indispensable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Clocher intérieur	OTH_TWR	Bonus	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Ancienne chapelle St Bernard	OTH_CSB	Bonus	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			

Tableau de suivi

- Zonage des numérisations
- Planning des 80 relevés
- Gestion du matériel professionnel
- Autorisations vol de drone



GEO DRONE 3D

# GESTION DES CONTRAINTES

## Découverte du site

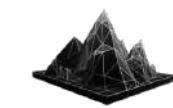
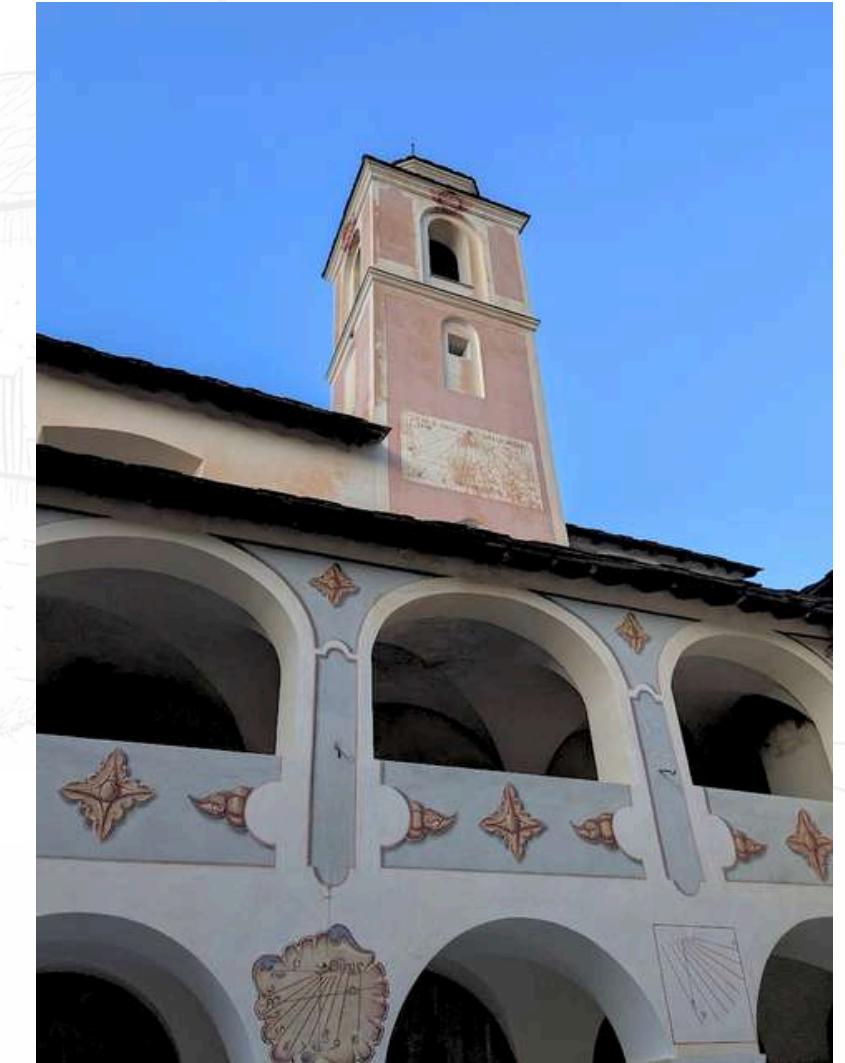
- 30 espaces à numériser en 5 jours
- Lieu ouvert au public
- Luminosité et ombres portées



*Evènement sur site*



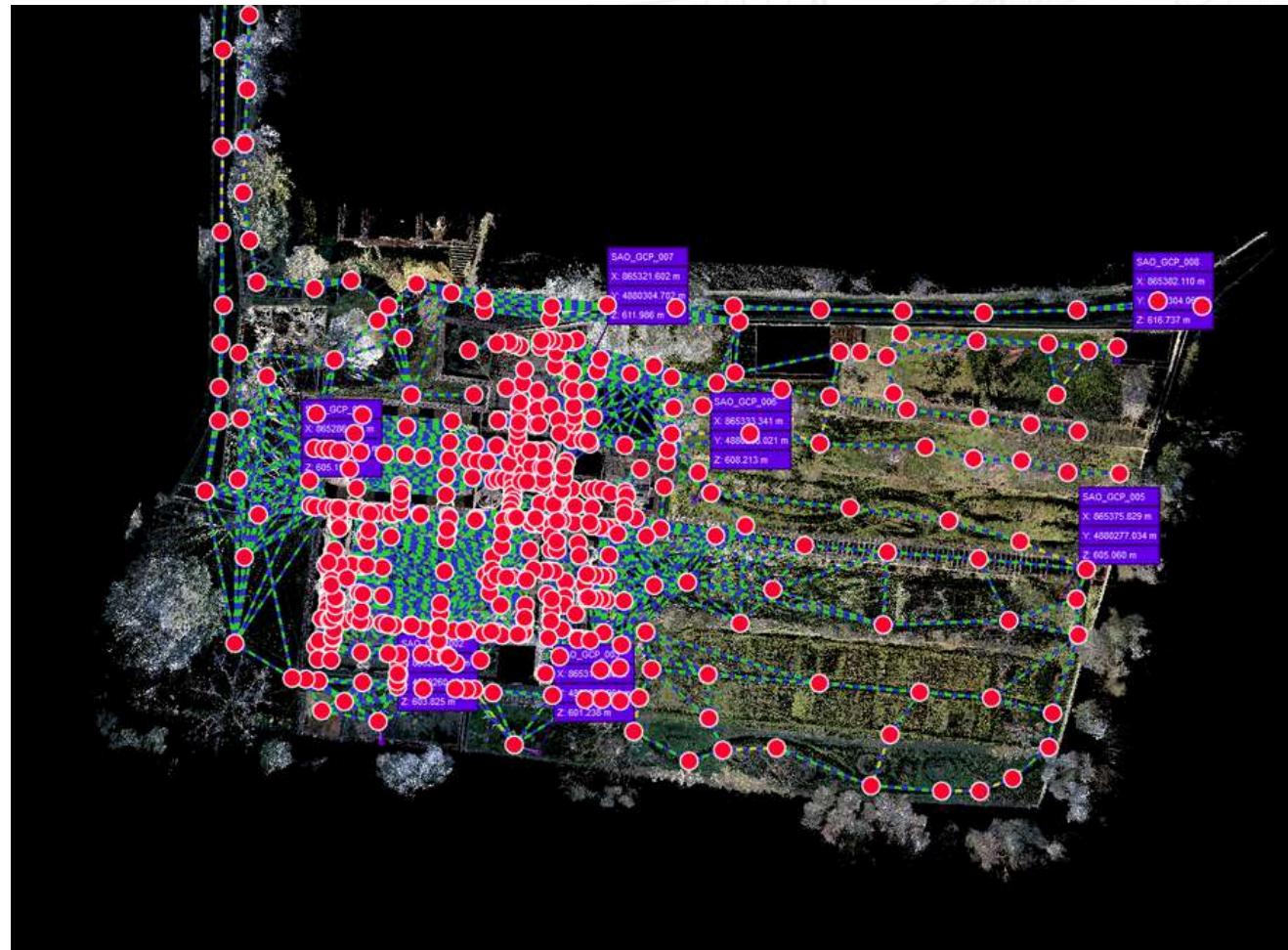
*Pas un nuage !*



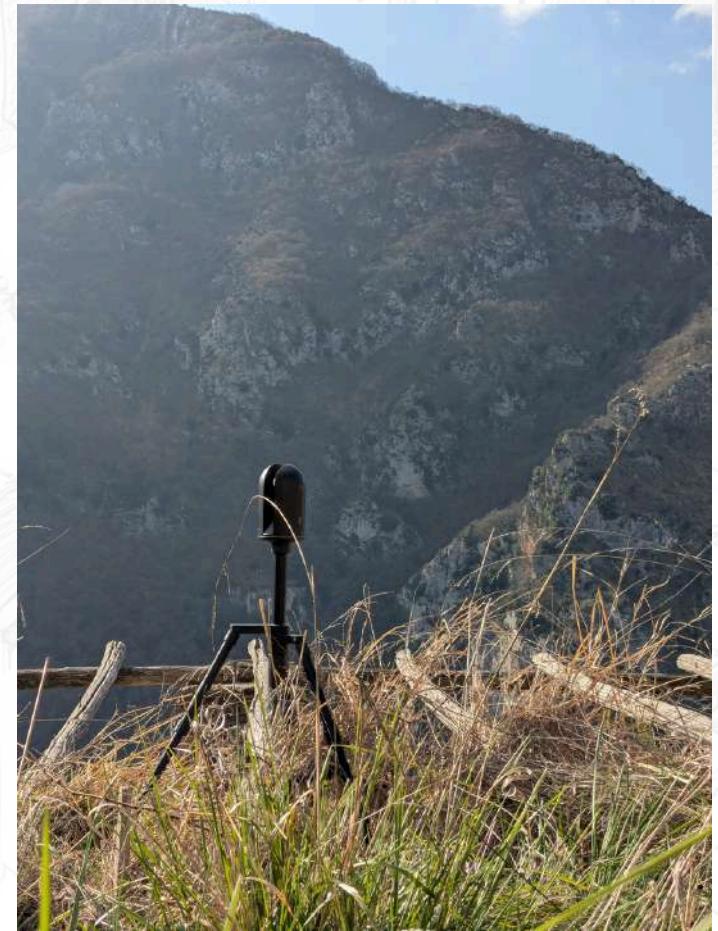
GEO DRONE 3D

# NUMÉRISATION

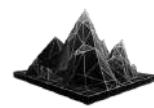
## Scan Laser



*Alignement des 500 positions*



*Extérieur, Intérieur + éclairage*



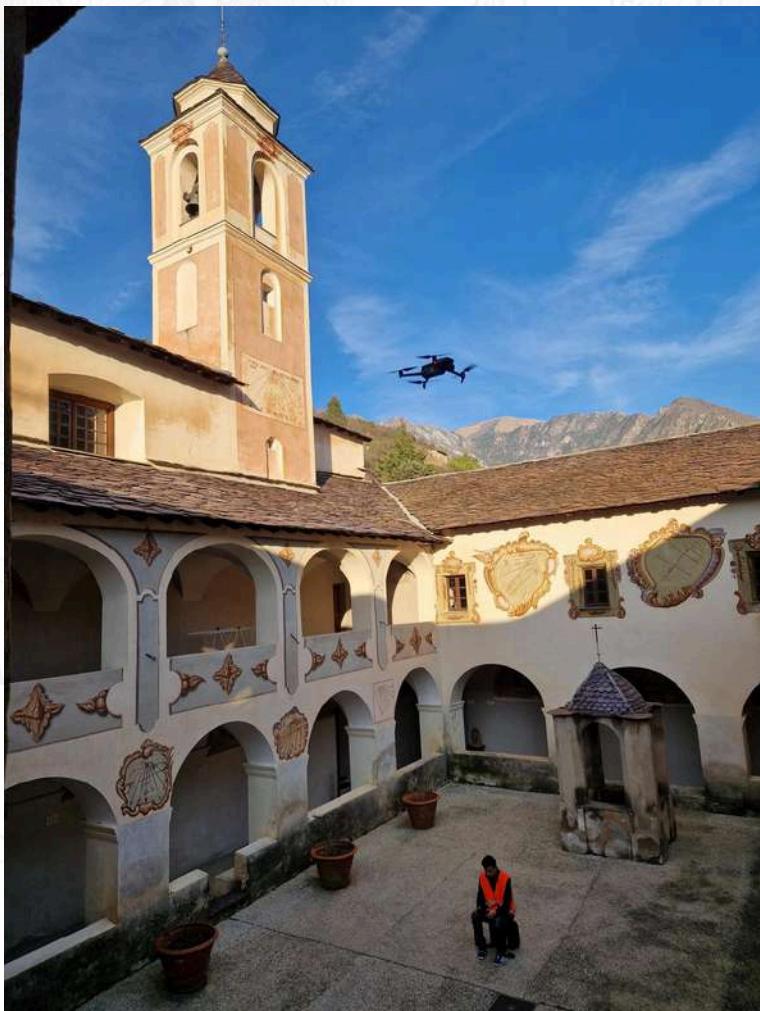
GEO DRONE 3D

# NUMÉRISATION

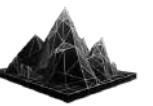
## Photogrammétrie aérienne



*Pilotage automatique et manuel*



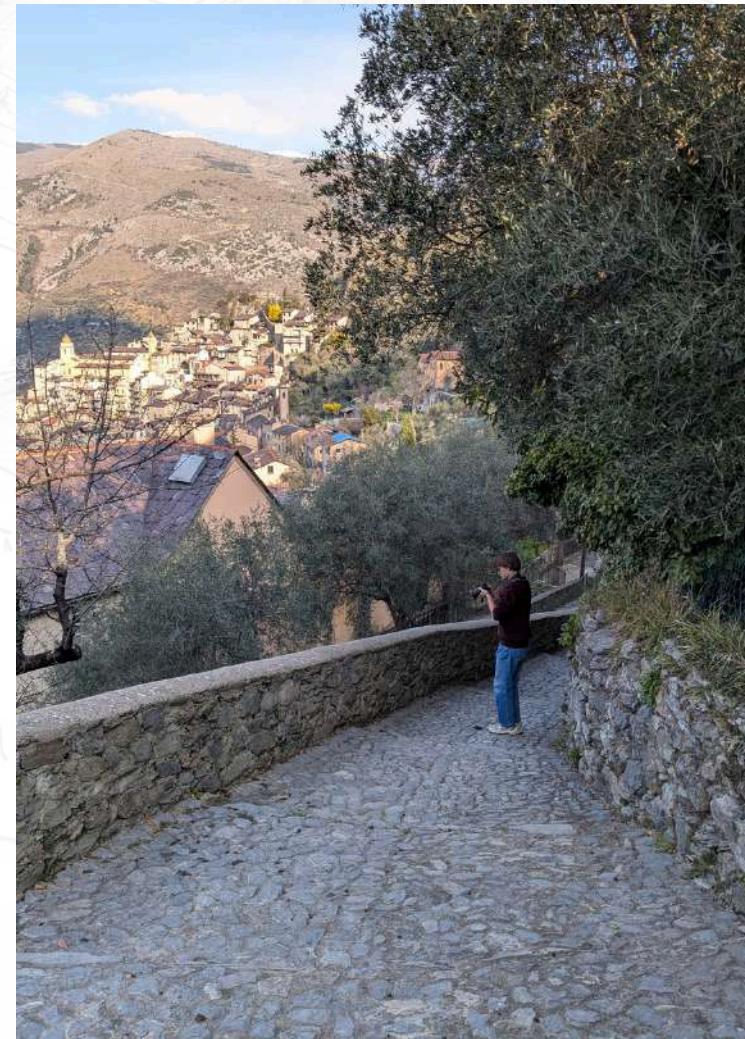
*10 000 photos aériennes*



GEO DRONE 3D

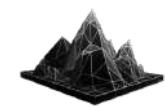
# NUMÉRISATION

## Photogrammétrie au sol



*Intérieur & Extérieur*

25 000 photos



GEO DRONE 3D

# NUMÉRISATION

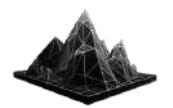
## Géoréférencement



*Relevés de points*



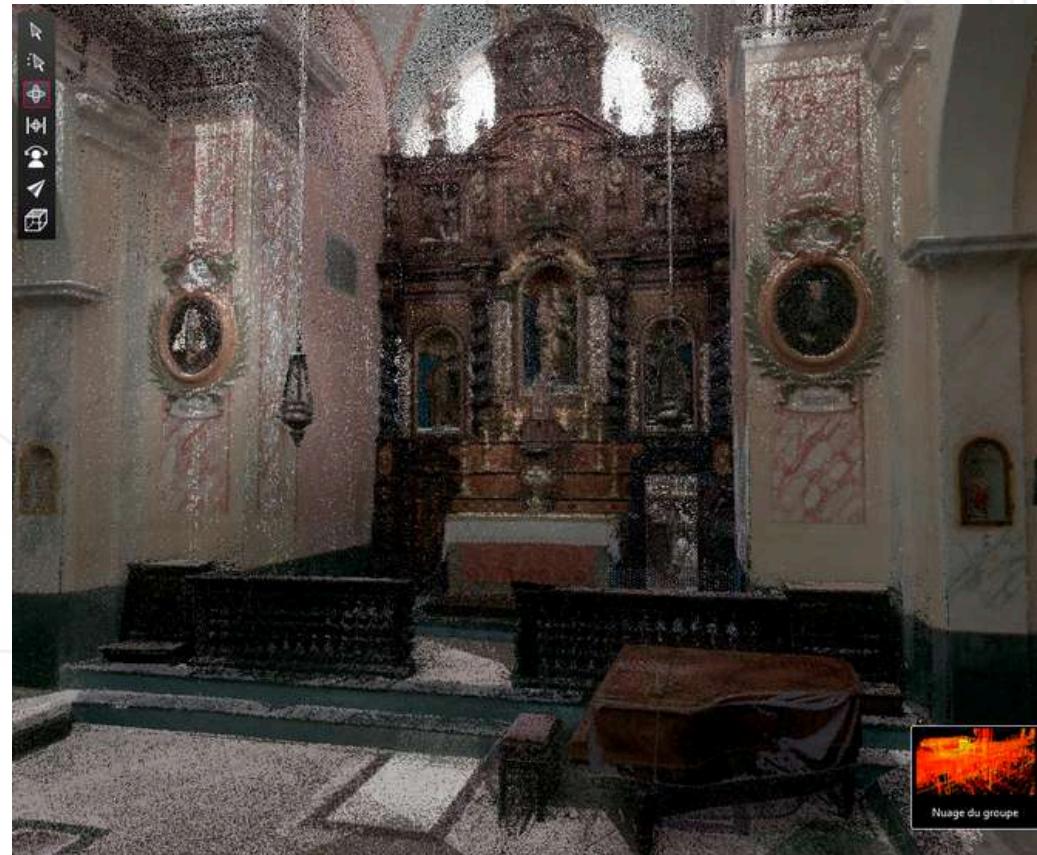
*Utilisation de cibles*



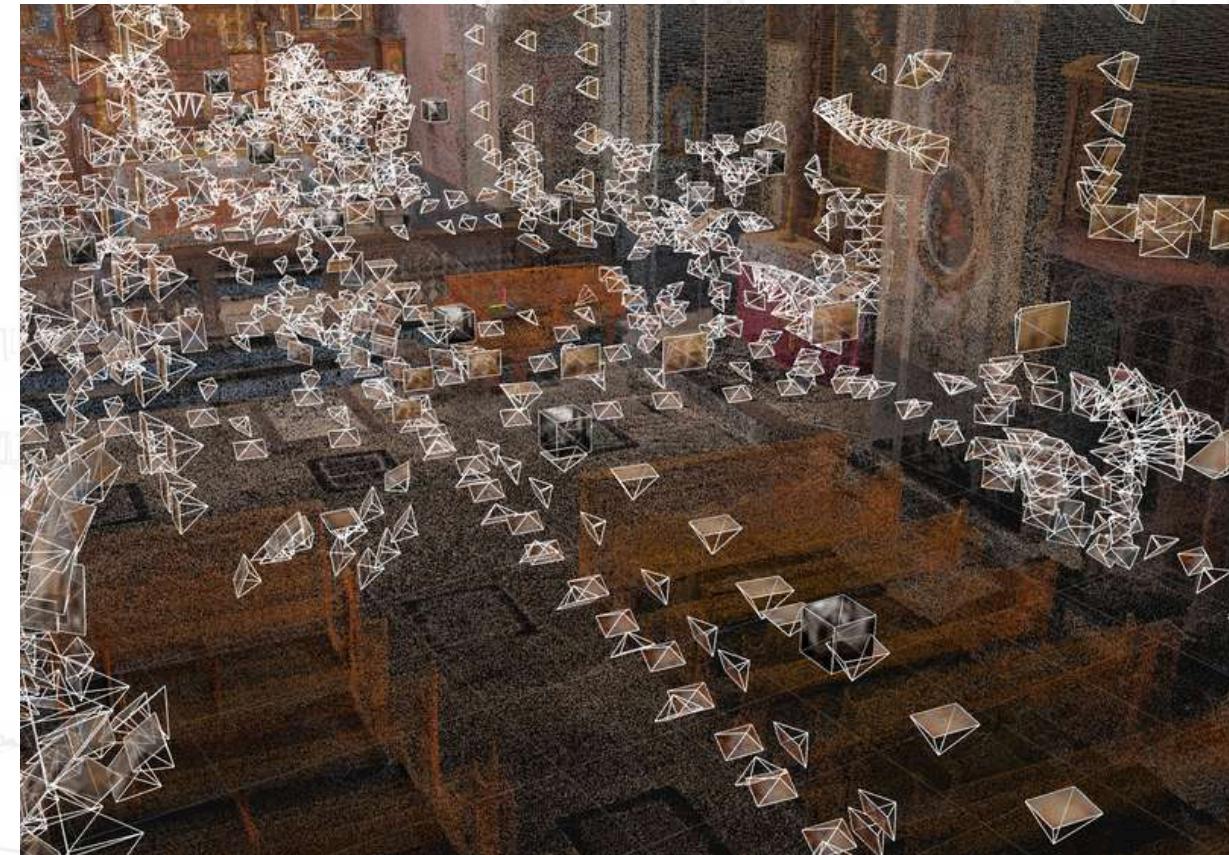
GEO DRONE 3D

# TRAITEMENT

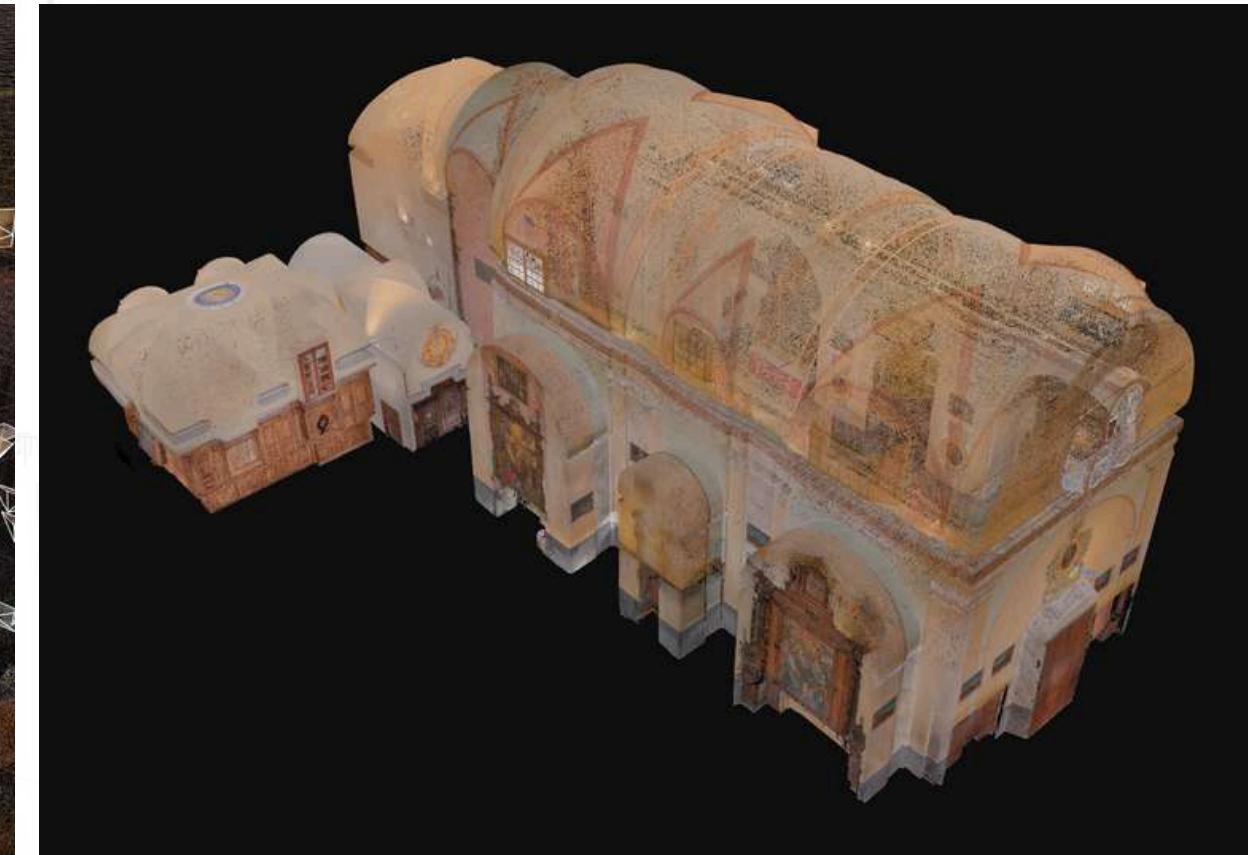
**Assemblage des 500 positions laser et 35 000 photos**



*Alignement laser*



*Alignement photogrammétrie*



*Zone - Église*



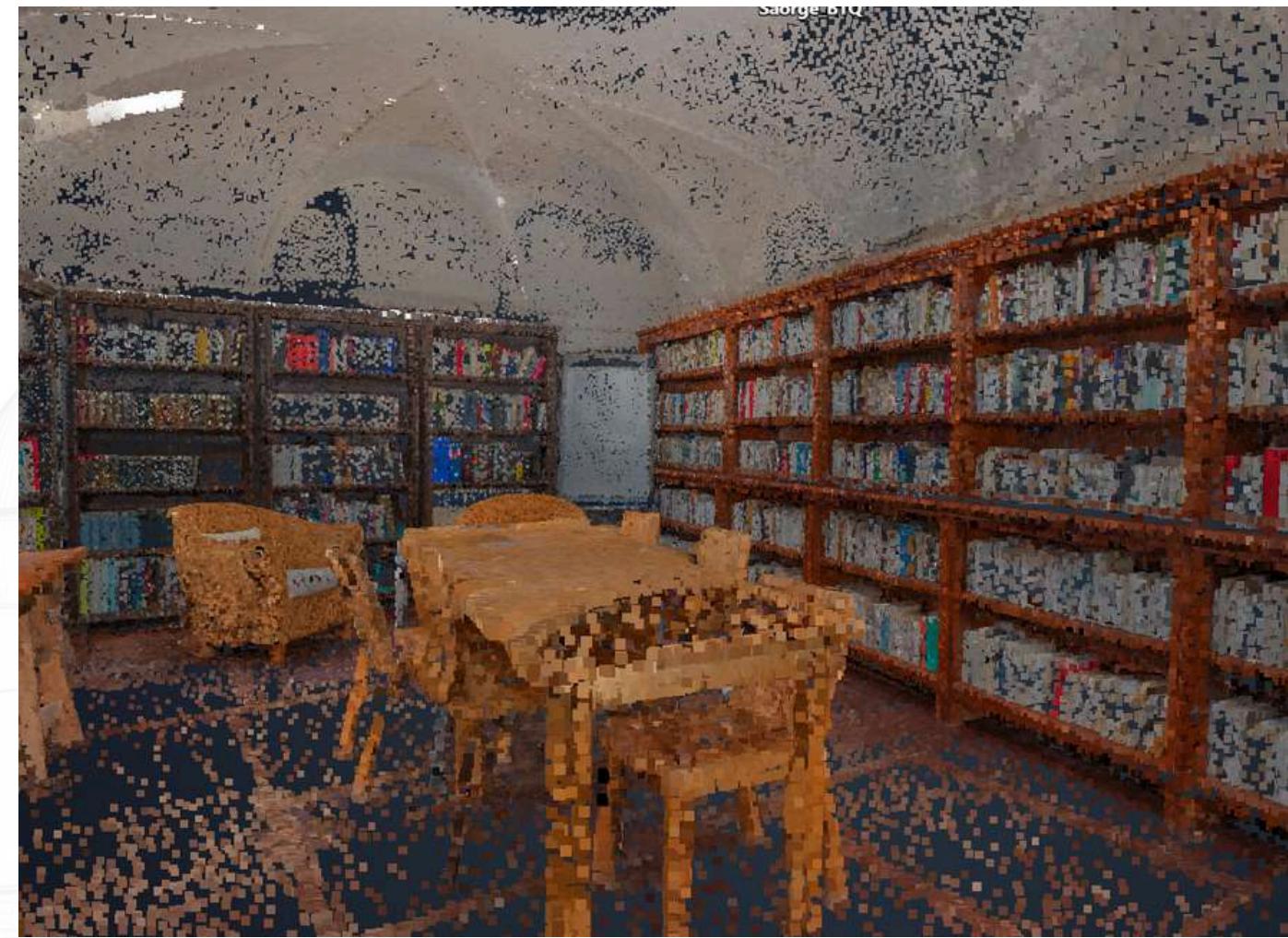
GEO DRONE 3D

# LIVRABLES

Jumeau numérique



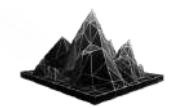
Modèle 3D



Nuage de points



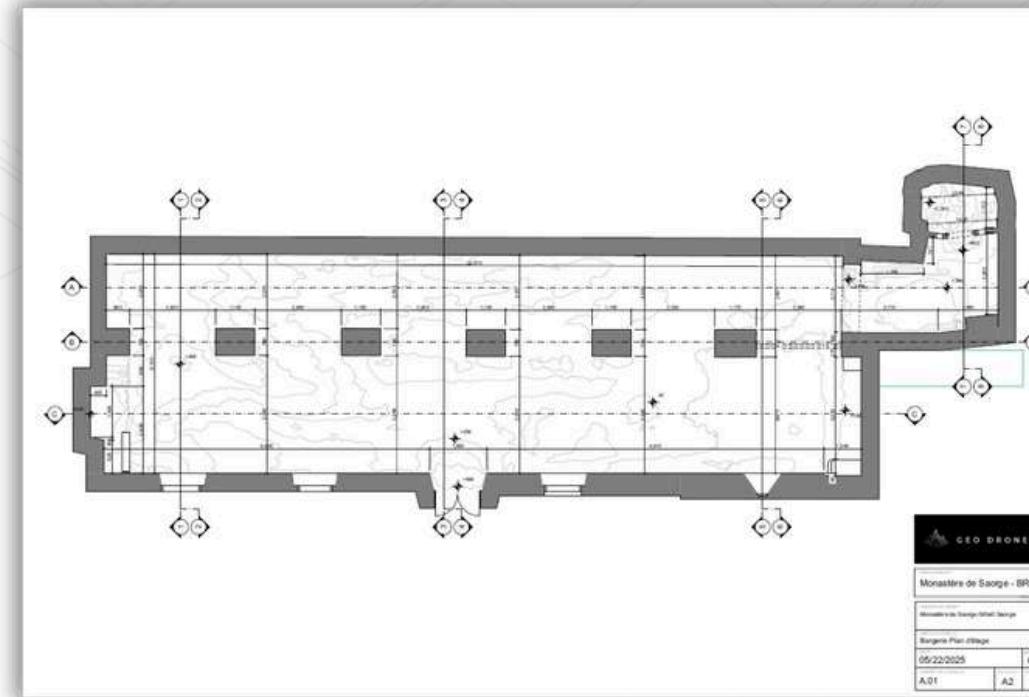
Orthophotos



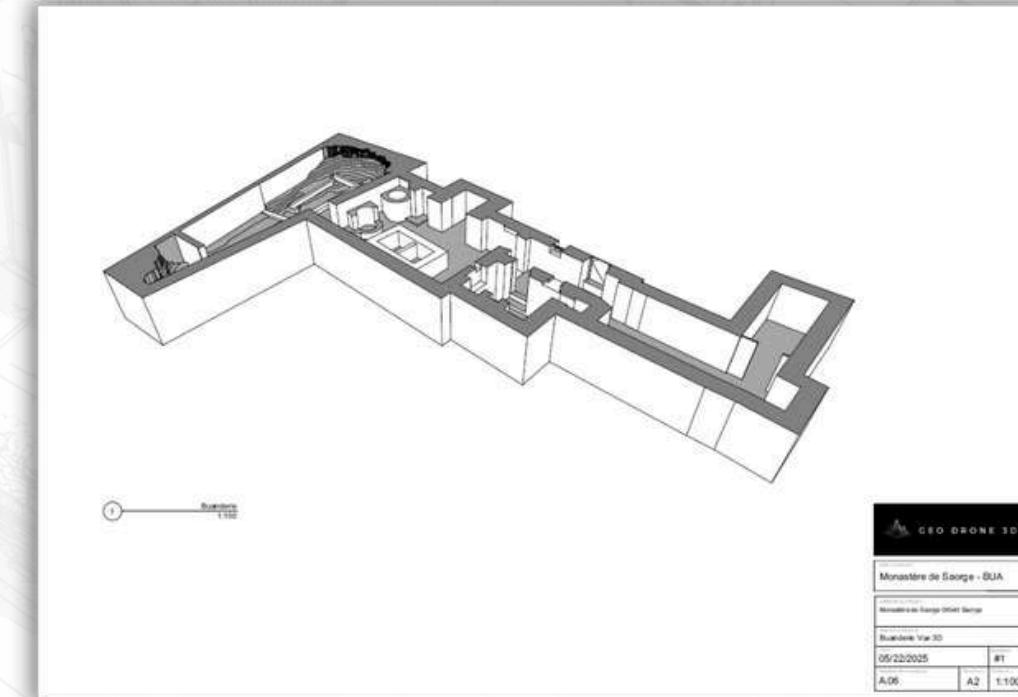
GEO DRONE 3D

# LIVRABLES

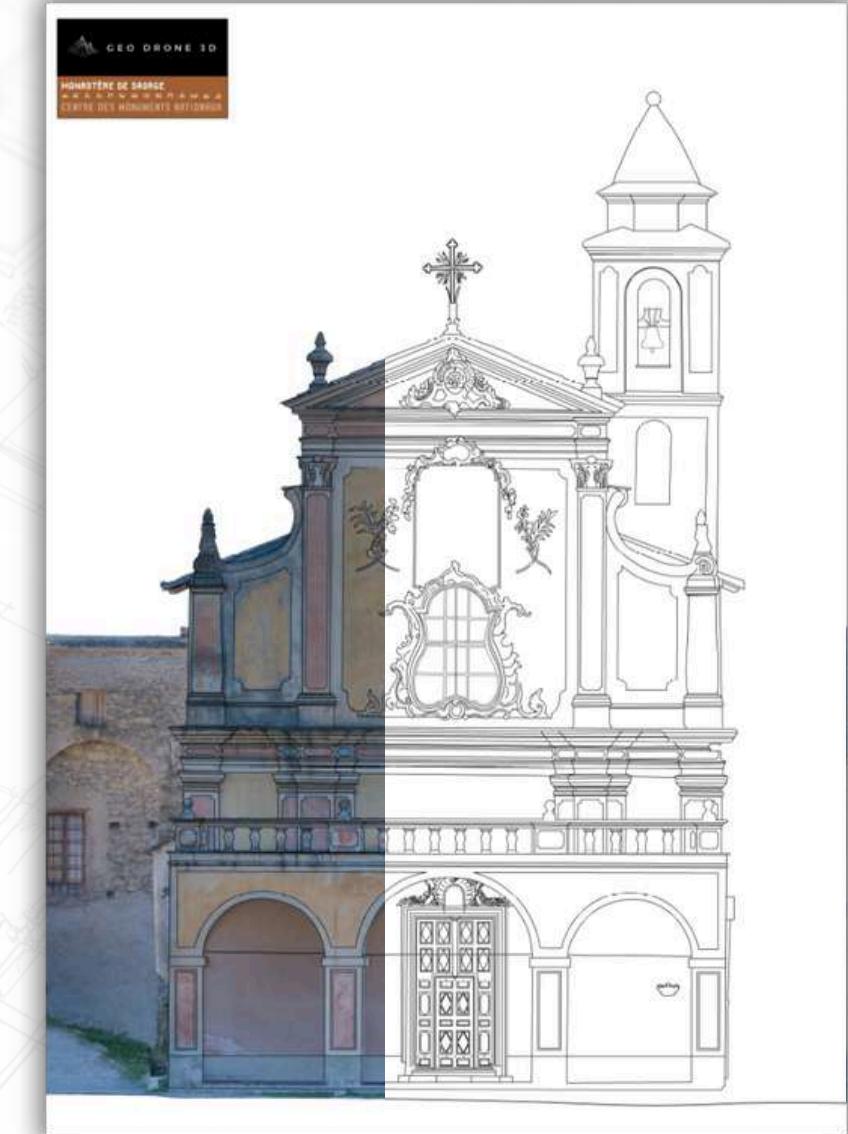
## Création de plans



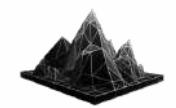
*Plan 2D de la bergerie*



*Plan 3D de la buanderie*



*Plan de façade Ouest*



GEO DRONE 3D

# LIVRABLES

## Plateforme interactive de visionnage du rendu

The screenshot displays the Geo Drone 3D software interface for viewing 3D renderings. The top navigation bar includes links for Résumé, Vidéos, Nuage de points, Modèle 3D, Orthophotographies (which is currently selected), Plans, Téléchargements, and Carte. There are also icons for sharing and exporting.

The main workspace shows a 3D model of a church building with a bell tower and its surroundings. A measurement panel on the left lists four measurements: Surface (46.65 m<sup>2</sup>), Distance (18.50 m), Distance (6.53 m), and Angle (141.90 °). The 3D view shows various dimensions and angles highlighted with colored lines and arrows.

On the right, there is a separate window titled "Nuage de Points 3D" showing a 3D point cloud model of the same church, labeled "Saorge\_EXT". This window includes tools for measuring distance, angle, surface area, and editing.

At the bottom, there is a message about the beta version and contact information, along with navigation instructions for the 3D view.

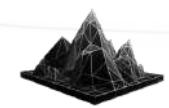
Bottom footer text: "Ce visionneur est encore en version bêta. Nous vous invitons à vérifier les mesures que vous effectuez et nous reporter tout bug sur [contact@geodrone3d.com](mailto:contact@geodrone3d.com)".

Bottom footer text: "Clic 1/3 points pour l'angle".

Bottom footer text: "Navigation 3D :".

Bottom footer text: "• Clic gauche + glisser : Rotation • Molette : Zoom • Clic droit + glisser : Déplacement • Double clic : Centre".

Bottom footer text: "Un site Geo Drone 3D - © 2023-2025".



GEO DRONE 3D

# MERCI !

**Rendez-vous à l'espace démo pour explorer par vous-même**

