

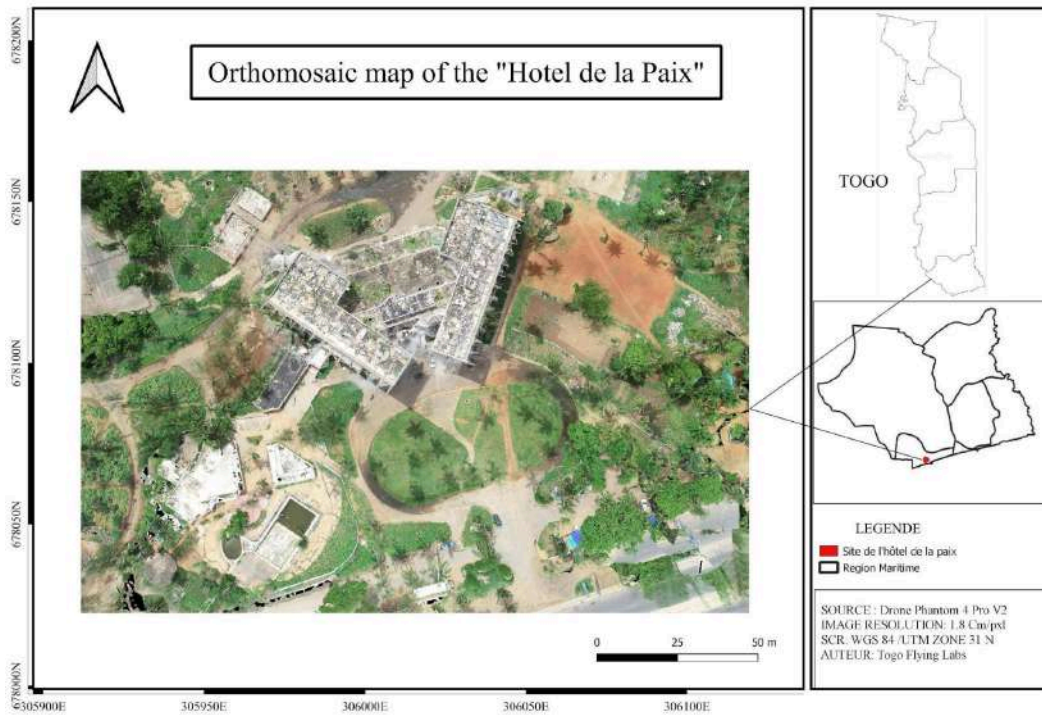
## Using Drones to Safeguard Heritage: 3D modeling of the "Hotel de la Paix"



3D model of the hotel's front



3D model of behind the hotel



### OVERVIEW

<b>Flying Labs</b>	Togo Flying Labs
<b>Geographic area</b>	OCAM street, Lomé-TOGO
<b>Date range</b>	May -June 2023
<b>Sector program</b>	<a href="#">DevRobotics</a>
<b>Main SDGs</b>	<a href="#">GOAL 9: Industry, Innovation and Infrastructure</a> <a href="#">GOAL 11: Sustainable Cities and Communities</a>

SCOPE	
<b>Project stakeholders</b>	Mitsio Motu Company
<b>People impacted</b>	Local community.
<b>Number of people impacted</b>	300
<b>Problem</b>	The Hotel de la Paix, a famous hotel complex in Lomé, will soon be demolished after decades of neglect. This emblematic establishment, built in the 1970s, was once a symbol of luxury tourism in Togo. It is currently the property of the Togolese State, which wishes to preserve this historical and cultural site using digital tools.
<b>Project objectives</b>	<ul style="list-style-type: none"> <li>• This initiative also aims to raise public awareness of the importance of preserving cultural and architectural heritage.</li> <li>• The three objectives were to create a 3D model of the hotel site, make an exhibition and presentation for the peace festival, and save digital heritage files.</li> </ul>
<b>Scope</b>	<ul style="list-style-type: none"> <li>• Using drones, digital data was collected to create a detailed 3D model of the building. This process captured every architectural aspect of the Hotel de la Paix, to preserve its appearance and history for future generations. In addition, this modeling can serve as a basis for a possible reconstruction.</li> <li>• This 3D model will be of immediate use during the Peace Festival, where it will be exhibited. Visitors will be able to virtually experience the hotel as it was in its heyday, immersing itself in its luxurious ambience and re-living its history.</li> <li>• As part of our project, we captured high-resolution images of the Hotel de la Paix site with the assistance of Mitsio Motu. Subsequently, we processed this data using the PIX4Dmapper software to generate the 3D model and orthomosaic of the site.</li> <li>• Finally, the data was shared among relevant entities for the preservation of the architectural heritage in the event that the demolition takes place.</li> </ul>
<b>Outcome</b>	The direct result was the high resolution orthophoto and video of the 3D models.
<b>Impact</b>	This project has played an important role in sensitizing government agencies and raising local awareness regarding the preparation of a digital dataset to support the reconstruction and safeguarding of heritages. Also, it illustrated that drones can be used for all kinds of future conservation and tourism promotion activities.
<b>Challenges</b>	We overcame all these challenges thanks to the authorisation of the Ministry of Defence, which put in place a team of law

	enforcement officers to ensure the smooth running of the mission. Finally, we unlocked the DJI NFZ (DJI no fly zone) to continue our activities.
<b>Next steps</b>	<p>The next steps are to;</p> <ul style="list-style-type: none"> <li>• Educate the authorities on the benefits of safeguarding the country's heritage through drone mapping and thought of creating a database for the 3D map.</li> <li>• Make an exhibition of the 3D model during the peace festival.</li> </ul>

### COMMUNITY ENGAGEMENT AND STAKEHOLDER SUPPORT

<b>Consent for data acquisition</b>	Firstly, the idea was put forward by Mitsio Motu to Togo Flying Labs (TFL) on the basis of a future collaboration, then TFL supported Mitsio Motu for the authorisations, planning, data collection, and processing.
<b>Community engagement activities</b>	Interaction with the local community through the law enforcement officer.
<b>Community groups engaged with</b>	Government Representative and Mitsio Motu Organization.
<b>Community attendance</b>	As it is a neglected site there were about fifteen people who played football nearby who were curious to see the drone activities.
<b>Community feedback</b>	The question for most people was the purpose of the activity and whether the site will be renovated.
<b>Stakeholder support</b>	We supported the stakeholders in creating a 3D model of the building through cartography. This 3D model will be preserved to bring back the history and review the architectural plan of the hotel. This project will enlighten the government officials present during the exhibition to make decisions for the preservation of the state's heritage.

### DATA ACQUISITION

<b>Size of area</b>	2,45 ha (0,0245km <sup>2</sup> )
<b>Drone</b>	DJI Phantom 4 Pro V2
<b>Sensor(s)</b>	RGB
<b>Flight plan software</b>	PIX4Dcapture
<b>Flight height</b>	40m
<b>GSD (Accuracy)</b>	2,16 cm/pix
<b>Number of images acquired</b>	373
<b>Number of flights</b>	2 flights

<b>Time invested in data acquisition</b>	1 day
<b>Georeferencing</b>	GPS onboard the Phantom 4 Pro V2, No GCP installed.

<b>DATA PROCESSING &amp; ANALYSIS</b>	
<b>Processing software</b>	PIX4Dmapper
<b>Processing time</b>	07h 40min
<b>Data products</b>	3D model and orthomosaic
<b>Analysis tools</b>	n/a
<b>Analysis outputs</b>	n/a
<b>Final outputs shared with stakeholders</b>	Raw data, 3D model of hotel shared with Mitsio Motu company
<b>Data sharing</b>	Google Drive, and hard drive