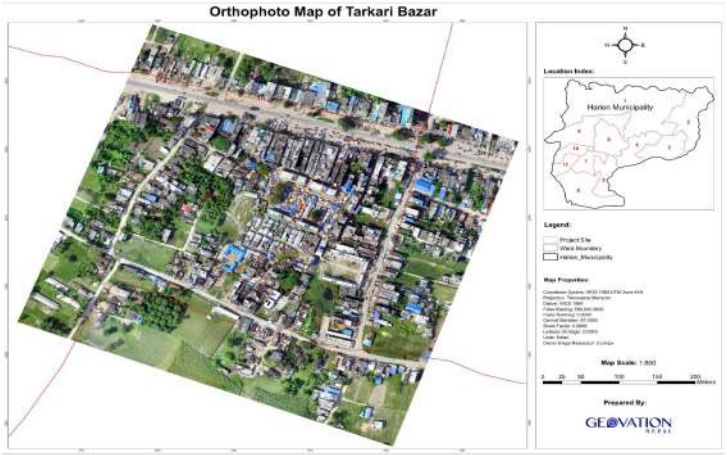
High-Resolution Aerial Mapping of Harion Municipality

Field Team with the local community kids



Orthophoto map of Harion Tarkari Bazar

OVERVIEW	
Flying Labs	Nepal Flying Labs
Geographic area	Harion, Sarlahi, Nepal
Date range	August 2021
Sector program	DevRobotics
Main SDGs	GOAL 9: Industry, Innovation and Infrastructure GOAL 11: Sustainable Cities and Communities GOAL 17: Partnerships to achieve the Goal

SCOPE	
Project stakeholders	• Nepal Flying Labs • Geovation
People impacted	Residents of Harion Municipality

Number of people impacted	An estimated 42,783 citizens of Harion municipality.
Challenge	Harion is a rapidly urbanizing municipality in Kathmandu Valley. Accurate geospatial data and updated maps are a present crucial need of the municipality for urban planning and other development activities. The area has very dense building clusters at some locations, hence it's difficult to map using satellite-based techniques.
Scope	This project involved preparing a high-resolution, accurate, and updated dataset that can be utilized by the municipality to plan and develop the modern integrated market effectively.
Outcome	The immediate outputs of the project included an Orthophoto, a Topographical Map, and a 3D Model.
Impact	In the short term, the municipality can use this data to prepare an updated municipal geodatabase. In the long term, the data can generate new insights for use cases such as developing interactive urban-based maps of the municipality or hazard analysis, as the location is prone to floods and landslides. In addition, the high-resolution orthophoto map will be helpful for future urban planning initiatives.
Next steps	Processing the captured data and updating the municipal geodatabase to influence development in the municipality.

COMMUNITY ENGAGEMENT AND STAKEHOLDER SUPPORT	
Consent for data acquisition	Harion Municipality, on behalf of the consortium, secured drone flight permissions from all relevant ministries.
Activities to engage with the community	A series of briefing meetings with municipal government officials were organized.
Community groups engaged with	• Municipal level government officials • District level government officials
Community attendance	Around 50 people attended the kickoff event at both locations.
Community feedback	The municipal and district level officials expressed their support to digitize and update the municipal geodatabase.
Stakeholder support	Not applicable

DATA ACQUISITION	
Size of area	0.4 km2 (40 ha)
Drone	SenseFly eBee Classic
Sensor(s)	RGB sensor
Flight plan software	eMotion
Flight height	120 meters above ground
GSD (Accuracy)	2.6 cm/pix
Number of images acquired	128
Number of flights	1
Time invested in data acquisition	1 day
Georeferencing	No GCP installed

DATA PROCESSING & ANALYSIS	
Processing software	PIX4Dmapper
Processing time	1.15 hrs
Data products	DEM, Orthomosaic, DSM and contours
Analysis tools	GIS to digitize the datasets
Analysis outputs	No analysis output
Final outputs shared with stakeholders	• Orthomosaic • DEM • Topographical map • 3D model
Data sharing	Hard drive.