30. Integrated Aerial and Terrestrial Mapping for OpenDRIVE-Based High-Definition Road Maps

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High-definition road maps require consistent geometry and semantics, yet no single survey platform guarantees complete observations of an urban road environment. An integrated workflow was developed at the Mostra d'Oltremare in Naples to evaluate acquisition and processing methods for high-definition road maps generation. UAV photogrammetry and airborne LiDAR were combined with vehicle-based mobile mapping and portable simultaneous localization and mapping systems. A GNSS control frame-work supported georeferencing and comparison of the datasets. Processing comprised point-cloud cleaning and integration, terrain and orthophoto production, road-element classification, and controlled compilation of an ASAM OpenDRIVE network in RoadRunner. The mobile mapping provided the operational basis for road-corridor acquisition. Automation was most useful in preprocessing and candidate extraction; road connectivity and semantic attribution required supervised modelling. The results support an acquisition strategy centred on mobile mapping, with aerial and portable systems selected according to coverage and accessibility requirements.