

position

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Boosting accuracy for sub-surface surveys

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Surveying on track
Plotting the path of
Australia's new Inland
Rail line

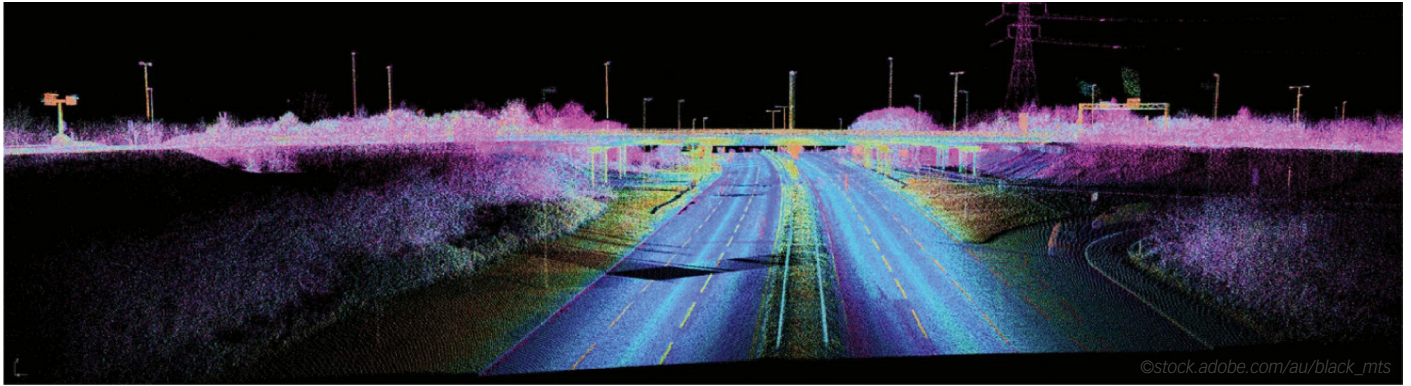


Geospatial defence
LiDAR and timing tech
put through its paces
at sea



Q&A with Lisa Bush
From a military career
to leading civilian
programs

Mapping the future of infrastructure with INS



In today's rapidly evolving technological landscape, precision is no longer just a luxury — it's an absolute necessity. From navigating the intricate labyrinth of underground sewers to inspecting towering power transmission structures and detecting hidden defects on buildings, accuracy is the key that unlocks progress. In this pursuit of precision, inertial navigation systems (INS), tightly coupled with GNSS, emerge as unsung heroes, empowering drones to create comprehensive 'as-built' digital twins of both the visible and the concealed world around us.

Leading this transformation is RapidMap, armed with its ground-breaking 360 Mobile Mapping technology enriched by cutting-edge Applanix inertial measurement unit (IMU) equipment. In a collaborative partnership with Advanced Navigation, a pioneer in providing precise inertial navigation in complex urban environments, RapidMap is rewriting the rulebook for large-scale road maintenance.

IMUs calculate from a known position, through a method called dead reckoning, the position, orientation, and velocity of a moving object, all without relying on external references such as GNSS signals. While GNSS provides a starting location

as a precise coordinate, typically each second, the IMU is updating the location in multiple dimensions from 20 to 200 times per second.

RapidMap's core mission revolves around the digitisation of asset infrastructure for life cycle management, paving the way for sustainability and enhanced efficiency. Its innovative Road 360 Mobile Mapping intelligence platform empowers asset engineers to verify the condition of infrastructure and the status of the environment (e.g. following bushfires or other natural disasters), while revolutionising road inspections to increase safety and significantly reducing costs. With scalability at its core, its adaptability enables seamless coverage of local road networks, bustling urban landscapes, and even entire states or nations.

Traditional methods for assessing road conditions relied on visual inspections and reactionary responses to complaints — a sluggish and labour-intensive process. Recognising this, RapidMap embarked on a mission to reshape the status quo using 360 Mobile Mapping, GNSS, INS and AI. Its innovative 'road network intelligence' solution operates on a 'road survey as a service' model, billing clients based on the

volume of road surveyed. The system adapts to various vehicle types, deploying them to traverse designated routes, much like traditional land-based mapping.

The meticulously processed 360 Mobile Mapping imagery, enhanced by AI algorithms, facilitates automatic identification of points of interest, yielding a readily accessible dataset for clients. 360 Mobile Mapping and 3D map data simplifies visual identification, using colour-coded metrics to spotlight issues such as cracks, potholes, lane markings, signage and barriers. Measurement data assists in creating accurate spatial records of assets or defects while evaluating severity, prioritising repairs and estimating the necessary materials, equipment and labour.

In achieving all this, RapidMap's primary challenge lay in maintaining navigational precision and timing, especially in dynamic and intricate urban environments. While GNSS excels in open areas, it falters in locations with obstructed satellite visibility, such as cities riddled with towering structures and tunnels.

RapidMap needed an INS capable of withstanding the rigours of vehicle mounting, navigating challenging terrains, accommodating high-speed travel and delivering pinpoint accuracy. This is where Applanix IMU equipment entered the picture, elevating spatial accuracy, surmounting the obstacles posed by urban environments and providing unparalleled precision in spatial data capture of imagery, sensor data or LiDAR. ■



To learn how Applanix technology can revolutionise your business, contact www.4dglobal.com.au on +61 (03) 9466 5255.