

The Z Factor: Creating a New Digital Surface and Elevation Model for NSW

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ABSTRACT

Geographic information throughout history has been an important aspect of mankind's development, mapping the world we live in, from prehistoric cave wall drawings to the traditional paper map and digital spatial data of more recent history. Today, developments in technology provide rapidly advancing ways in which Geographic Information Systems (GIS) visualise and analyse spatially enabled data in digital environments. Previously limited to 2D, spatial modelling is today able to visualise and analyse objects in 3D digital environments, changing how we plan, design, construct and mitigate risk. The growing interest in Government, business and communities for identifying our world in 3D is driving widespread development of digital surface and elevation models in innovative ways. Land and Property Information (LPI), through the NSW Surface Model Enhancement Project (SMEP), is the first agency in Australia to embark on the ambitious goal of developing high-resolution, information rich, state-wide digital surface and elevation models. This data will meet the strategic goals of the NSW Foundation Spatial Data Framework (FSDF) and NSW Location Intelligence, delivering elevation data that will provide the capability to attribute existing datasets and lead to the development of new datasets for the future. These models will allow the agency and its stakeholders and customers to realise true 3D spatial data environments that will:

- *enhance our ability to visualise and analyse spatial data,*
- *reduce overall NSW Government ad-hoc spending on surface model procurement,*
- *improve the NSW Governments' capacity to effectively plan, respond to and mitigate against the risks and impacts of climate change and natural disasters,*
- *better support hydraulic and hydrologic modelling, mitigation and planning,*
- *provide stakeholder organisational efficiencies, and*
- *continue supporting LPI's systems and services provided to stakeholders.*

This presentation will outline some of the key benefits and challenges of the Surface Model Enhancement Project before looking at the data and a range of innovative workflow enhancements that have delivered tangible results. From there it will explore the ability for feature extraction and attributing opportunities that the soon-to-commence 3-Dimensional Feature Extraction (3DFEx) project will focus on.

KEYWORDS: *LiDAR, point clouds, surface models, feature extraction.*