

# Industry Government 3dQLD Strategy

## Progression of the 3dQLD initiative

### ABSTRACT

*This paper supports a joint industry-government strategy for the progression of the 3dQLD initiative. Partners in this initiative include the Surveying and Spatial Sciences Institute (SSSI) QLD division, Spatial Industries Business Association QLD (SIBA), Australian Institute of Mine Surveyors (AIMS), the Surveyors Board of QLD and Queensland Government, Department of Natural Resources and Mines (DNRM).*



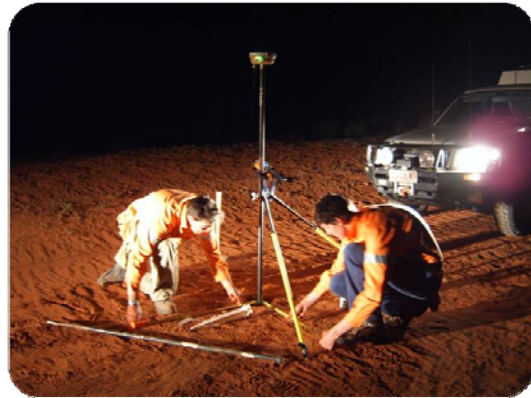
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# Industry-Government 3dQLD Strategy

The paper follows on from the 3dQLD discussion paper published by the 3dQLD taskforce in April 2013. <http://3dQLD.org/wp-content/uploads/2013/06/130424-3dQLD-Discussion-paper-Ver-1-1.pdf>

## 1. The need for change

Whether an organisation is constructing a new community, prospecting for a mine, planning their machine guidance farming systems or irrigation and water rights for agribusiness, the need to access timely and accurate spatial data, above and below ground is critical to the productivity of these businesses.



Over the last decade, technological advances in GNSS<sup>1</sup> technology have become far more ubiquitous and can now provide positional data with high levels of accuracy from hand held devices to on board machine guidance systems in mining, construction and agriculture enabling high precision, driverless operations. Furthermore, the growth of online imagery and maps means businesses can overlay a variety of information on a digital map or aerial photograph and manipulate those images electronically in a range of innovative and sophisticated ways.

However, much of Queensland's cadastral information, land and mining tenures, infrastructure and underground assets (mining and buried services) were collected prior to the ready availability of modern positioning technologies. In most cases, this high quality data infrastructure is not connected to a coordinated framework. This means that these data sets are not always easy to overlay with any accuracy.

Today, we are not yet in a position where a person can readily access a single system that allows them to see, accurately and confidently, combinations of rectified imagery, the cadastre, the mining tenures, the utilities placements, and the range of other overlays that would provide for public safety, productivity enhancements and increased business innovation and services. We can overlay all these datasets but we cannot use the resulting product with certainty and confidence.

In a modern economy, certainty about location and confidence that the information is telling the full story, underpins the productivity of businesses and government and enables the markets to be more effective in managing risk. Industry and the broader community is driving greater demand for a 3D representation of the increasingly complex tenure arrangements, to meet consumer need.

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<sup>1</sup> GNSS (Global Navigation Satellite Systems) incorporate many satellite navigation systems including GPS, GLONASS, Galileo AND Compass/BeiDou.

## 2. The vision for the future

The 3dQLD vision aims to make Queensland one of the easiest places in the world to invest in construction, tourism, mining and agriculture because of the quality of information that is readily available to decision makers, providing them with confidence and certainty about opportunities and investments.

Our vision is that Queensland will lead the way in 3D visualisation of spatial information that supports a wide range of activities including construction in the vertical as well as horizontal development of our cities, the subterranean exploration of natural resources, the enhancement of efficient precision agriculture, the management of groundwater and marine resource, providing greater certainty and clarity to businesses and government.



## 3. Strategy for achieving the vision

It is clear that the realisation of this vision cannot, and will not, be achieved unless industry and government work together in a collaborative partnership.

Critical is the recognition of the important role of private sector investment in delivering this vision; encouraging and facilitating the innovative and entrepreneurial role of industry.

In developing this initiative the surveying and spatial industry has recognised the need to be a leader in providing go-to and authoritative services that will drive reform and accelerate the attainment of the vision.

There are three key elements that need to come together in order to realise the vision that will deliver a mix of short and long term wins for Queensland

### ***Modernise survey practice***

Modernise survey practice to improve confidence in the authoritative status of survey plans and related data. This means:

- Ensuring all land and mining tenure surveys going forward are based on a national datum.
- Reforming the way survey data is captured, maintained and published in the cadastral database, strengthening its authoritative linkage with land and mining registers.
- Government and private industry working together to develop modern and sustainable approaches to the maintenance and upgrade of the cadastral and mining data registers.

### ***Improve integration***

Improve the integration of authoritative data sets ensuring that users can access through a single point all of the required information. This means:

- Enabling a user to gain access to all of the data sets that intersect in both the vertical and horizontal dimensions as well as traversing backwards in time to discover prior data.
- Government and private industry working together to ensure industry is able to support and maintain their value added data sets in conjunction with the government's authoritative underpinning data.
- Reinforcing a commitment to government ***Open Data*** and the ***Queensland Digital Economy Strategy***.<sup>2</sup>

### ***Incentivise progress***

Identify and implement incentives to attract and encourage industry to accelerate the collection and correction of 3D co-ordinates, this may include for example:

- data sharing arrangements between government and industry
- access to information for contributors to 3dQLD
- accreditation status for participants
- commercialisation opportunities for value-added data and services
- right sourcing of maintenance, management and upgrade functions



## **4. Key concepts**

There are a number of key concepts that will provide the environment for success in this endeavour:

***Government's role*** – recognising government's role as custodian and point of truth for land and mining tenure registers, provision of the geodetic network and setting the standards governing effective quality control over data.

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<sup>2</sup> The Open Data Revolution and The Queensland Digital Economic Strategy are current initiatives of the Queensland Government.

**Private Sector's role** – recognising the private sector's role of contributing to, using and enhancing that foundation information to provide a wide range of both basic and sophisticated, both traditional and highly innovative, products and services.

**Surveyors' Role** - recognising registered surveyors as creators of survey data of high integrity. This data that can be supplied in a format that can be used and reused by intelligent data management systems, allowing for future value add opportunities by the wider community.

**Start now** – recognising that the 3dQLD is a vision that will take many years to realise and will mature and evolve over time; however there are many things that can be done right now that will head us in the right direction so we should make a start even if we don't yet have all the answers.

**Collaboration** - Industry and government working together to co-design an improved framework for collection, correction, maintenance and publication of the cadastre culminating in the establishment of an industry roadmap.

**Incentivisation** - Development and implementation of a range of short and medium term incentives to encourage parties to invest in activities that will work towards the vision.

**Modernise and align** – Amending the current regulations to ensure that all new tenure surveys are referenced to a 3D national datum and integrating 3D mining and survey plans into a single seamless authoritative object. This key concept is consistent with the State Development, Infrastructure and Industry Committee review into the future and continued relevance of government land tenure across Queensland.<sup>3</sup>

**Digital Efficiency** – Implementing the digital collection of survey data to deliver maximum economic benefit across all sectors, and migrating paper based mining tenure and survey plans to integrate with digital land tenure and publish through a single portal, thus enabling the linking of other key value add and commercial data sets.



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<sup>3</sup> State Development, Infrastructure and Industry Committee; ( May 2013), Final report; Inquiry into the future and continued relevance of government land tenure across Queensland' Recommendation No 43 - 'The committee recommends that the Queensland Government integrates all tenure data sets and maps to address surface and subsurface tenures as a priority', pp 147-150.

## 5. Key actions

The key actions to deliver the vision for 3dQLD are for industry and government to:

### Short term:

- **Enhance the existing surveying standards** of practice to ensure that all new tenure surveys are aligned to the national datum to maximise the 'value add' of digital 3D cadastral survey data.
- **Develop incentives for industry** to invest in activities that will accelerate the rectification of cadastral parcel plan alignment with a national datum and the realisation of 3dQLD.
- **Facilitate and promote the digital collection and lodgement of authoritative cadastral and mining survey data.**
- **Continue to build the coverage of CORS infrastructure**<sup>4</sup> over regional areas of the state through enhancing an already demonstrated cooperation between government and private industry.

### Long term:

- Industry and government to co-design and implement an enhanced framework for the collection, correction, maintenance and publication of the cadastre – **the 3dQLD road map** – that will begin to deliver efficiencies in a 3-5 year period. The plan shall incorporate 3D cadastre and resource tenements covering issues such as incentives, legislative support, systems development, research and pilot projects.

## 6. Next Steps refer to Action Matrix



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<sup>4</sup> CORS (Continually Operating Reference System) refers to a global trend in complementing and/or replacing permanent marks as a means for realising and delivering the Queensland Geospatial Reference Frame (QGRF).

## 3dQLD ACTION MATRIX

Key Actions	First Step Action	Supported by
<b><i>Enhance existing surveying standards and regulations</i></b>	<p>a. Implement industry-supported standards that enable 3dQLD, through the current regulatory review project.</p> <p>b. Release details of government/industry pilot projects conducted to date.</p>	<ul style="list-style-type: none"> <li>Review national (ICSM) and international (FIG) best practice to establish framework.</li> <li>Identify key improvements that would provide best private sector economic outcomes.</li> <li>Further industry consultation across all sectors private sector, Industry and government.</li> </ul>
<b><i>Develop incentives for industry</i></b>	<p>c. Industry and government to develop and publish a discussion paper on incentives to migrate to enhanced survey practice.</p>	<ul style="list-style-type: none"> <li>Consult with development including BIM (Building Information Modelling), mining, construction, agriculture and tourism sectors for value add opportunities.</li> <li>Test the suitability of a variety of spatial data to accelerate the spatial integrity of the Digital Cadastral Data Base (DCDB).</li> </ul>
<b><i>Facilitate and promote the digital collection and lodgement of authoritative cadastral and mining survey data.</i></b>	<p>d. Industry and Government to realise digital plan lodgement (EARL) as the critical 'gateway' to the 3dQLD vision and a digital economy.</p> <p>e. Investigate mechanisms to enable ongoing maintenance and access to vital mining datasets to ensure the ongoing safety of the public.</p>	<ul style="list-style-type: none"> <li>Appoint an EARL implementation working group to realise digital plan lodgement and investment in EARL.</li> <li>Professional development workshops for use of GNSS for tenure surveys and digital lodgement via EARL.</li> <li>Government to conduct feasibility of combining mining and land title registers</li> <li>Industry consultation to administer the cataloguing, storage and maintenance of mining data sets in a 3D environment.</li> <li>Encourage further academic research into recognition/ vectorisation of paper survey /mining plans and the 3dQLD vision.</li> </ul>
<b><i>Continue to build the coverage of CORS infrastructure</i></b>	<p>f. Identify further opportunities for industry and government collaboration to enhance CORS and the QGRF.</p>	<ul style="list-style-type: none"> <li>Increase awareness and adoption of the enhanced standard for the Australian Survey Control Network (SP1).</li> <li>Educating agriculture, mining and tourism in regional areas of benefits of increased CORS coverage.</li> <li>Government informing industry widely on any perceived complications in datum over time.</li> </ul>
<b><i>Resource, design and implement the 3dQLD roadmap</i></b>	<p>g. Seek resources to support the development of the 3dQLD roadmap, consistent with the key concepts within this strategy.</p>	<ul style="list-style-type: none"> <li>Formalise a 3dQLD governance agreement for short and long term implementation of 3dQLD.</li> <li>Appoint a governance committee to agree on the most suitably qualified people to develop 3dQLD road map.</li> </ul>

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