3D QLD

Benefits and Challenges in going 3D

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Key Topics

• Going Digital – Are we there yet?
• 2D, 3D, More D’s...
• Why is Government interested?
  • Productivity, Productivity, Productivity
  • Example in Construction and Infrastructure
• 3D QLD Initiative
• Challenges
• A National Approach?
Department of Natural Resources and Mines
Department of Natural Resources and Mines
Digitisation (1980’s – 2022 est.)

Lot 1 on Registered Plan 1, Adavale, Qld
Queensland’s (Australia’s) Foundation Spatial Data

**Imagery** is a snapshot of Queensland’s natural and physical assets and environment captured by a camera or sensor from terrestrial, Remotely Piloted Aircraft System (drone), manned aircraft, or satellite platforms.

**Transport** is the representation of land, water and air networks (roads, rail, ports and transport infrastructure).

**Water** encompasses the movement, distribution, and quality of surface water or groundwater.

**Place Names** are the recorded names of cultural, physical and geographical features (whether natural or artificial).

**Location Address** describes where the physical location of a property is.

**Administrative Boundaries** is a collection of legislative, regulatory, statistical, political, maritime and other general administrative boundaries.

**Elevation and Depth** is the measurement of the Earths’ surface above or below a vertical datum.

**Positioning** provides the precise location of points above, on or within the earth (includes names, unique code, latitude, longitude, datum and height).

**Land Parcel and Property** contains descriptive data including boundaries, tenure, ownership type, size and a record of interests in land for the purpose of land administration.
2.5D – Digital Elevation Model & Draped Data
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An increasing pressure on Government Systems to meet industry need for:

- Greater 3D positional and dimension accuracy
- Information in digital form
- Further development of Open data policy
- Major productivity improvement for construction and infrastructure
Going Digital in Construction

‘Imagining Construction’s Digital Future’ McKinsey & Co, June 2016:
• Cost and schedule overruns are the norm in the construction sector.
• Construction labour productivity has not kept pace with overall economic productivity.
• Generally: 20% over time and 80% over budget

![Graph showing labor productivity over time](image)

Labor productivity, gross value added per hour worked, constant prices,¹ index: 100 = 1995

¹Based on 2010 prices.
Source: Organisation for Economic Co-operation and Development
Going Digital in Construction

Going Digital in Construction

1. Higher-definition surveying and geolocation
   Rapid digital mapping and estimating

2. Next-generation 5-D building information modeling
   Design platform for the future

3. Digital collaboration and mobility
   Moving to paperless projects, from the office to the workforce

4. The Internet of Things and advanced analytics
   Intelligent asset management and decision making

5. Future-proof design and construction
   Designing with materials and methods of the future

Source: McKinsey analysis
Queen’s Wharf Development
- Brisbane, Queensland
Volumetric Format Plans / 3D Views
Queen’s Wharf Development

- Detailed large scale and complex Volumetric Surveys
- Highly accurate modelled data and cadastral framework
- Only Volumetric Footprint recorded in the DCDB
Based on the value of Land and Property Administration assets of:

- Mortgages secured against land titles of $277AUD billion
- Total Asset value of $924AUD billion

The direct economic benefits forecast for Queensland are:

$253 million to $996 million NPV over 15 years
$524 million to $2,154 million NPV over 20 years

for the Australian economy in the long term

Range of between $5-$15 Billion NPV as a minimum
Department of Natural Resources
Department of Natural Resources and Minerals
Depariment of Natural Resources
Transforming our Cadastral and Geodetic Systems

**Current state**
2D, paper based workflow, double-handling of information, no two-way data flow capability

**Future state**
Enabling a digitally built environment via integrated Building Information Models, 3D Cadastre
Case for a National Spatial Data Infrastructure

Land & Property Theme

National Expenditure
$30M pa

QLD spends $6M pa on this theme

20% of the parcels & 20% of the national expenditure

How much would it cost to scale x5?
First move towards NSDI

Common workflows and outputs identified
Subtle differences acknowledged
No barriers identified
Working to shape requirements for a collaborative approach to a national spatial data infrastructure
Agree principles and approach
Software as a Service

SCOPE
Land Parcel & Property Positioning
Geocoded Addressing
Place Names
Administrative Boundaries
Closing…

• Going Digital – Are we there yet? – Yes (Almost!)
• 3D+ will be the new norm
• Full 3D workflow
  • Design to Asset Management
  • From a Building to a Digital City
• Benefits are compelling
• Key Challenges
  • Pace of change
  • Huge data volumes
  • Data Governance
  • Fragmented approach not viable
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