



*Spatially Enabling
Australia and New Zealand*

Open Spatial Analytics

Focus: Near-real time outputs to reduce latency in decision-making

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Australia New Zealand Cooperative Research Centre for Spatial Information
Australia

GEOSMART ASIA 2017, MALAYSIA



Australian Government
Department of Industry,
Innovation and Science

Business
Cooperative Research
Centres Programme

Need to reproduce information *crc•si* increasing !



- What data was used?
- What processes were carried out?
- What standards were followed?
- Was there a QA/QC carried out?

NSW GOVERNMENT | Data | FAQs | Open Data Related Sites | Search

DATA NSW PROVIDING ACCESS TO NSW GOVERNMENT DATA

Open Data Blog | Previous | Future | Next | All posts > | Action Plan

Designing our Digital Future
The NSW Digital Government Strategy is here. Find out what it means for you.
[Read more](#)

digital.nsw
DESIGNING OUR DIGITAL FUTURE

[View the Open Data Action Plan >](#)

View spatial data in NSW Globe



Mobile App Catalogue [View all](#)



Newest Datasets

- Payroll tax under the Jobs Action Plan - Department of Finance, Services and Innovation
- Surcharge: purchaser duty - Department of Finance, Services and Innovation
- Property Asset Sales Report - Property NSW

Open Data

Why Open Data?

"Data is a game-changer for government. Open data provides the intelligence for insight, invention and exploration that translate into better products and services that improve everyday life and encourage business growth."

The Hon. Victor Dominello, MP, Minister for Innovation and Better Regulation, launching the 2016 Open Data Policy



NSW Government Open Data Policy

Licensing and AusGOAL

As part of the Open Data Policy, NSW is implementing open access licensing by utilising the AusGOAL Framework. AusGOAL provides a way by which information providers can make appropriate licensing decisions that enable the re-use of data and information in new and innovative ways by the community.

[More about AusGOAL](#)

How to publish your agency's data

Providing public access to your agency's data need not be a overwhelming activity. Please get in contact with us and we'll be happy to assist.

@DataNSW

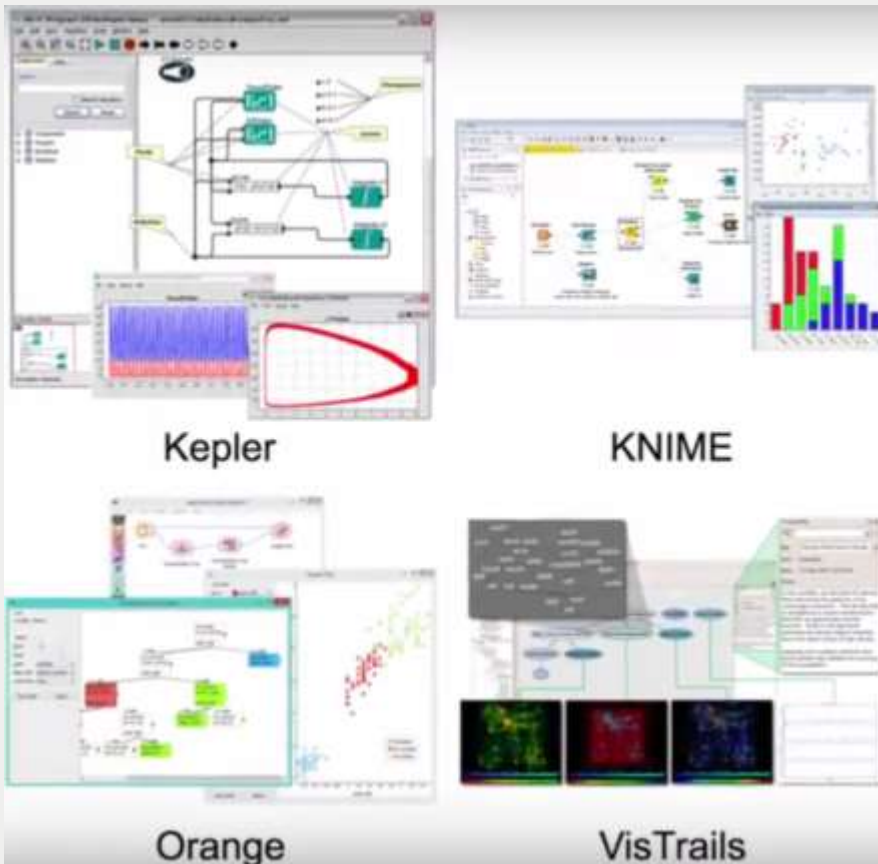
DataNSW @DataNSW
Data is about helping states and solving problems, learn more via the excellent online course (free) @openstaf from @OZIMG
Aug 7, 2017

DataNSW @DataNSW
CSIRO Gamble Challenge: [https://www.csiro.au/gambling](#)
Jul 28, 2017

Data Statistics

80,000 datasets about the health of the NSW population on HealthStat	2,700 environmental datasets you can search spatially from OEH	95 public education datasets from CESE	30 dashboards reporting on services to vulnerable people and families from FACS Statistics
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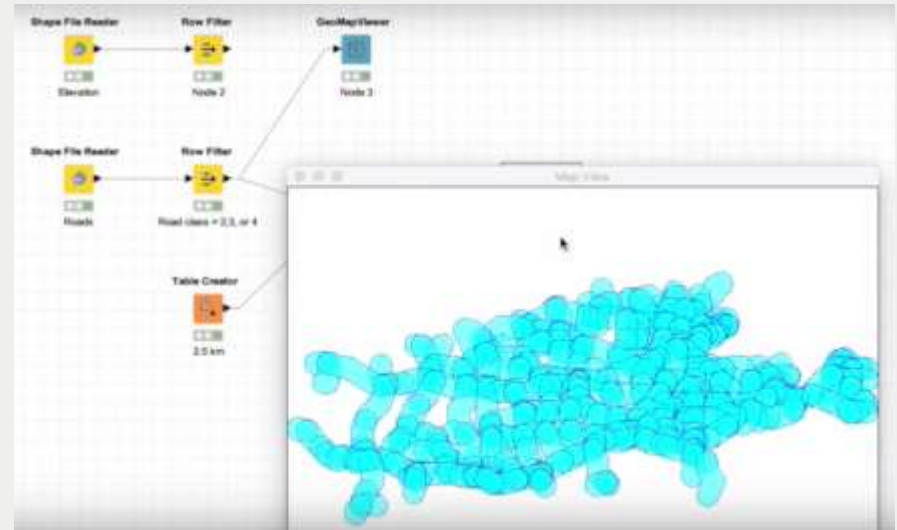
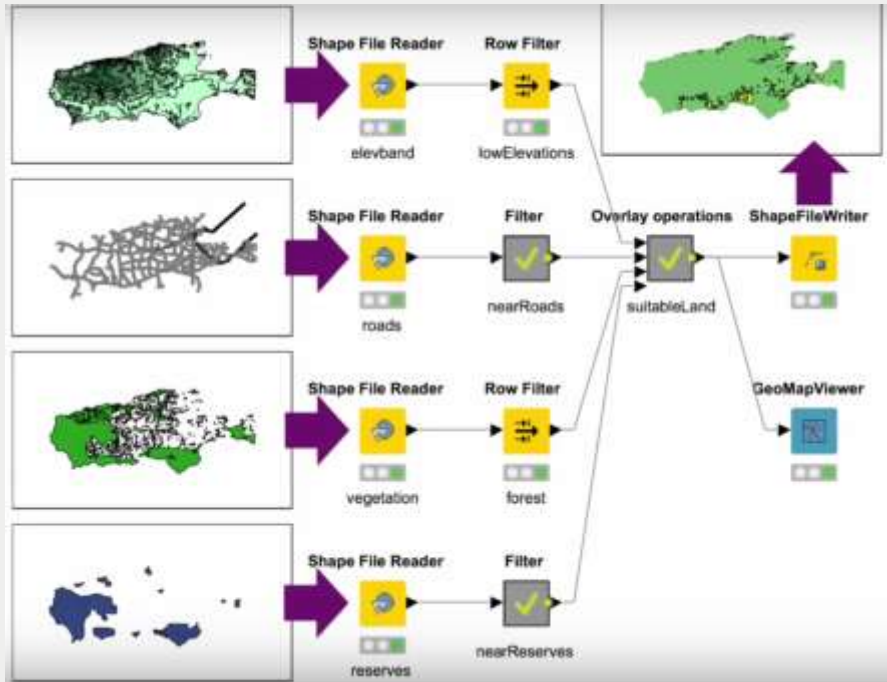
- Open Spatial Analytics helps to integrate – Scientific workflows with data, documentation and expertise in the way it puts science at the centre!



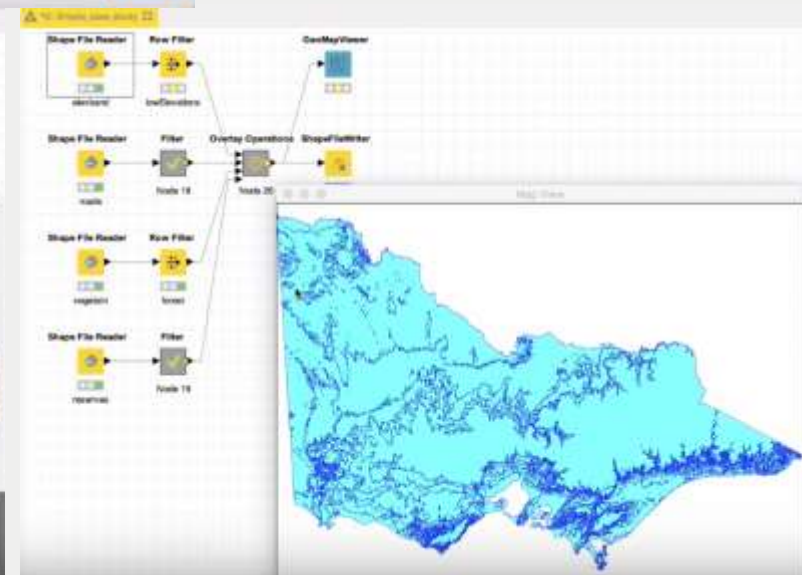
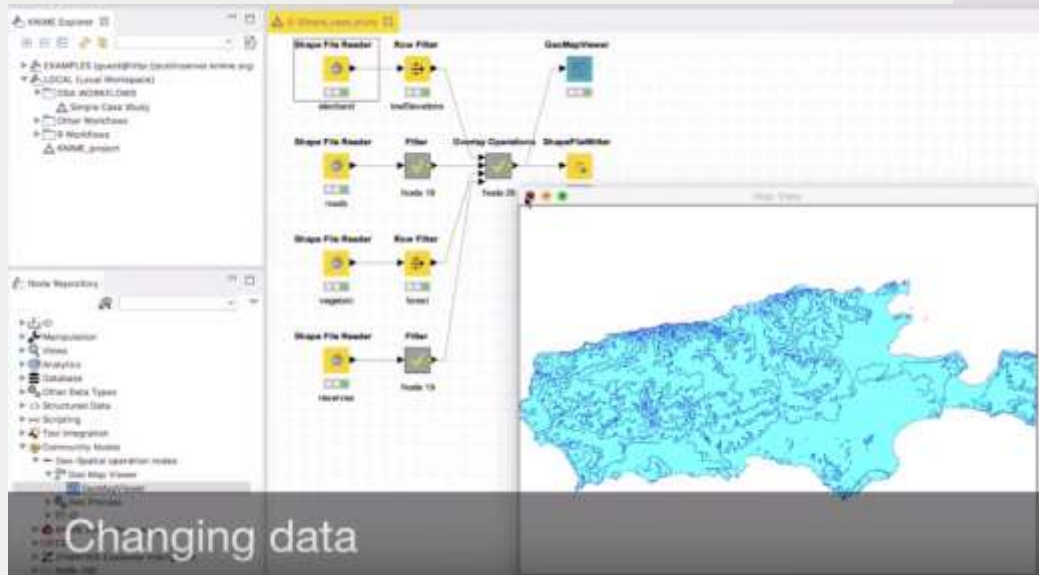
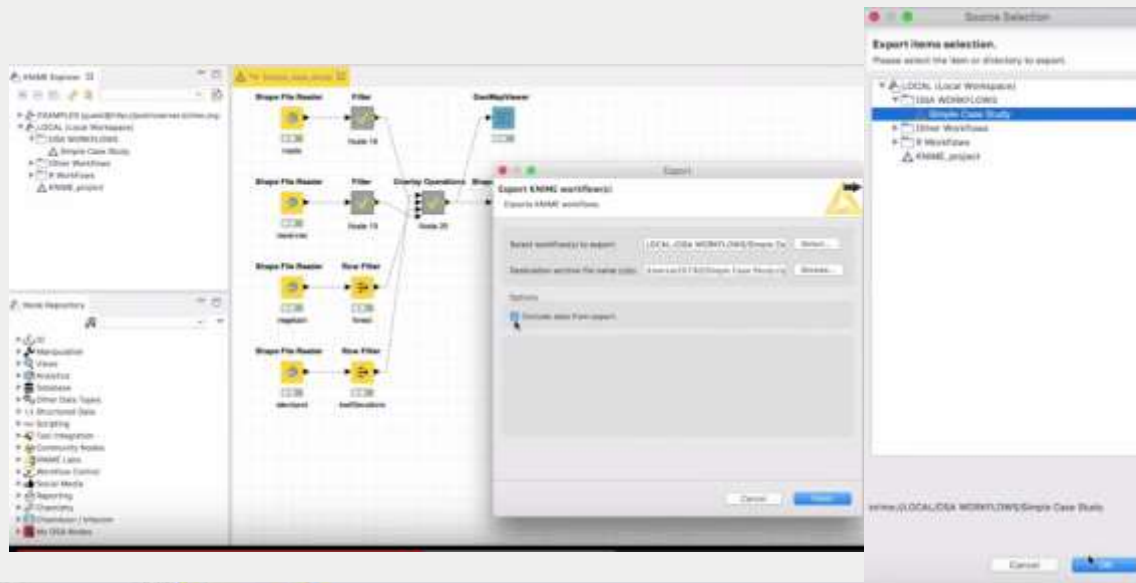
Scientific workflows similar to business workflows: Tools allows us to breakdown our tasks into manageable parts using the metaphor of flowchart.

Example of Scientific Workflow

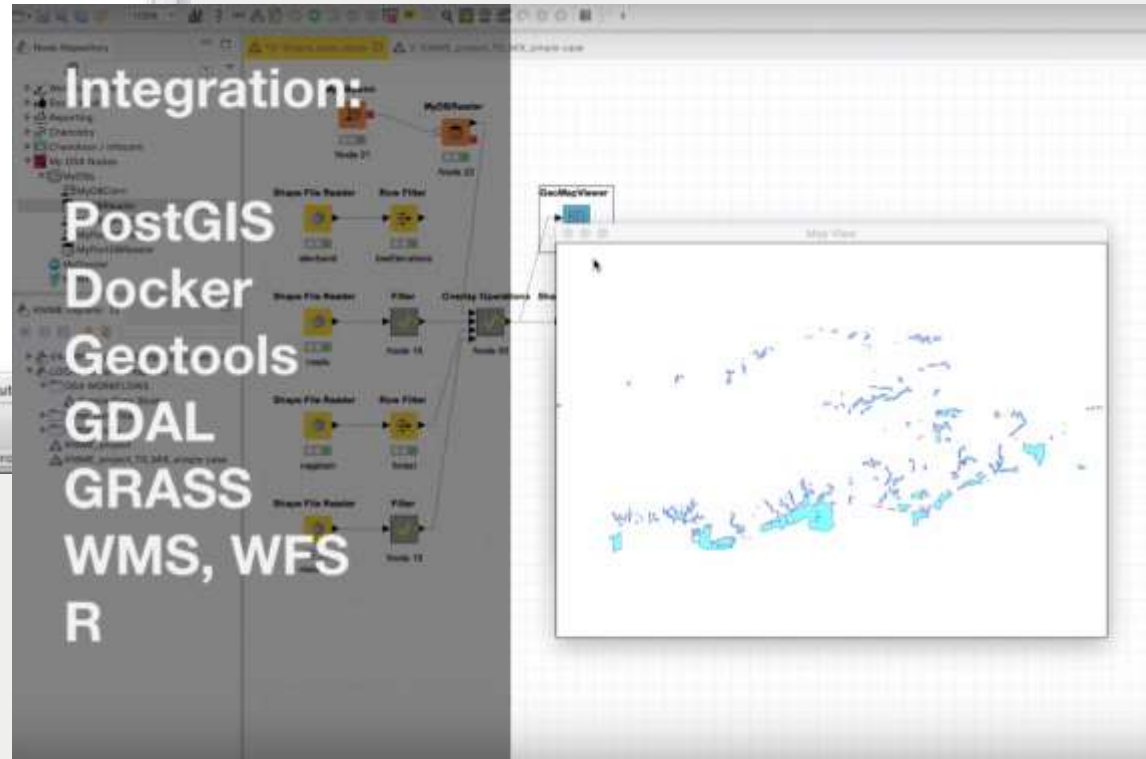
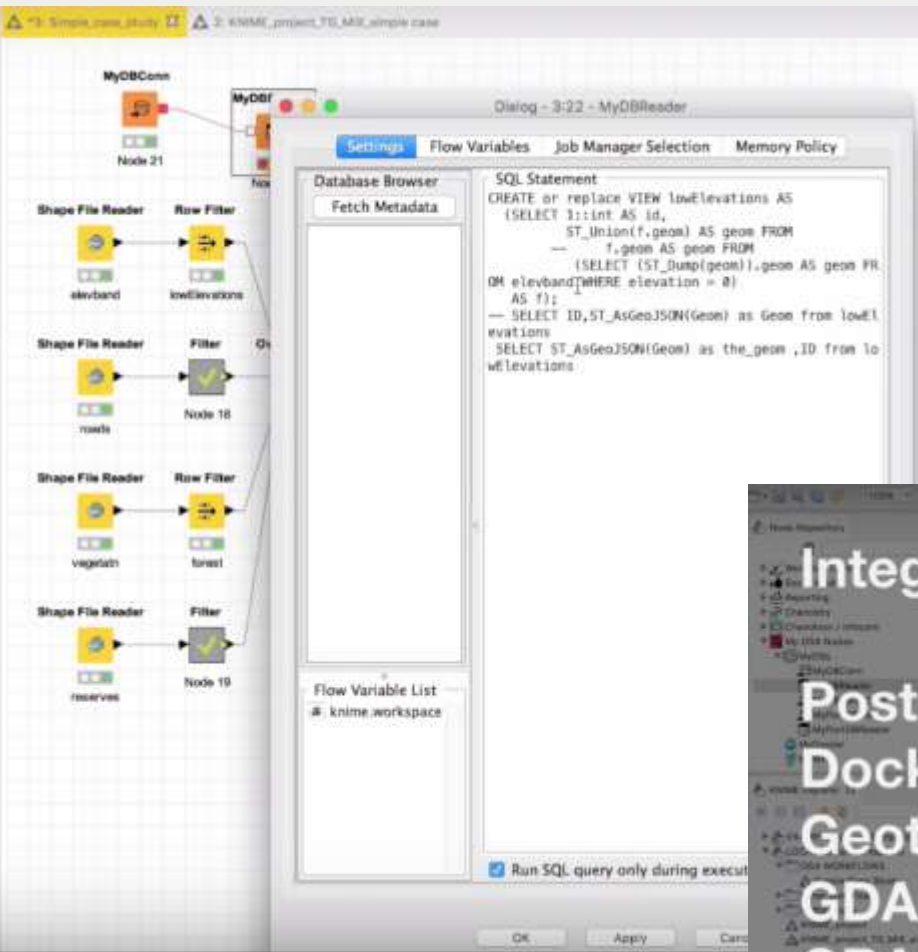
Allows to capture expert knowledge from the user as a Visual Language for self documenting analytics



Share Workflows and reuse !



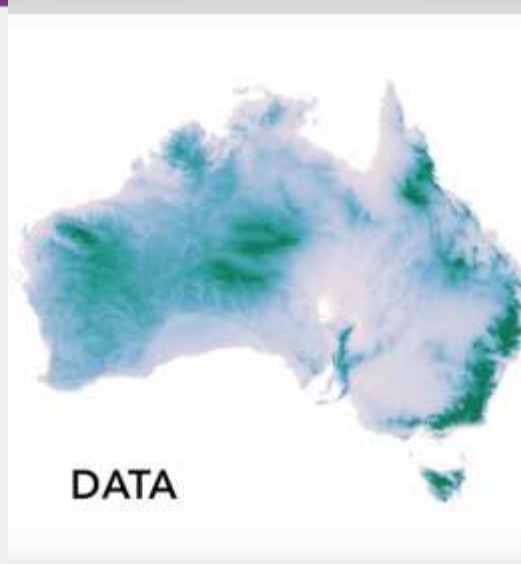
Modify Workflows as per your use



National DEM case study

Replicating Geoscience Australia's procedure for creating National DEM by blending 100 TB of LiDAR Data over 60 different surface into a coherent

Scientific Workflows



DOCUMENTATION

The colour scale is to be a single surface containing data from all available coastal laser surveys. This DEM will be resampled to a 1-metre vertical resolution ensuring that it can be publicly distributed with a Creative Commons license (CC BY 3.0). An additional product to a set of elevation contours representing the extent of inundation at various sea heights. The data distribution method to be a web portal enabling visualisation of elevation and inundation for users to identify potential threats in key areas of interest.

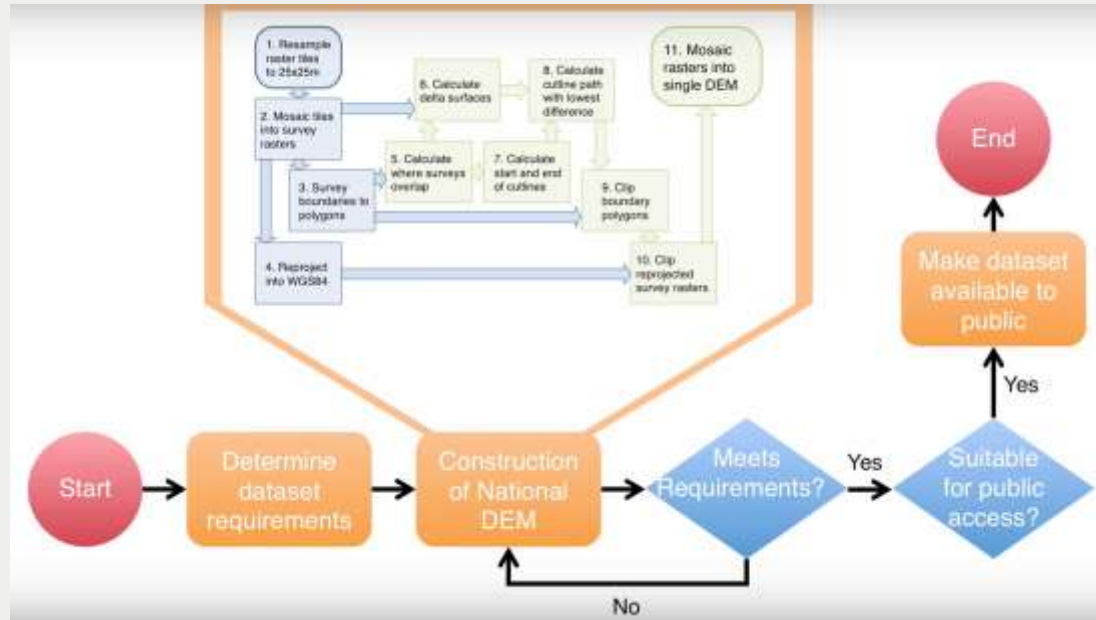
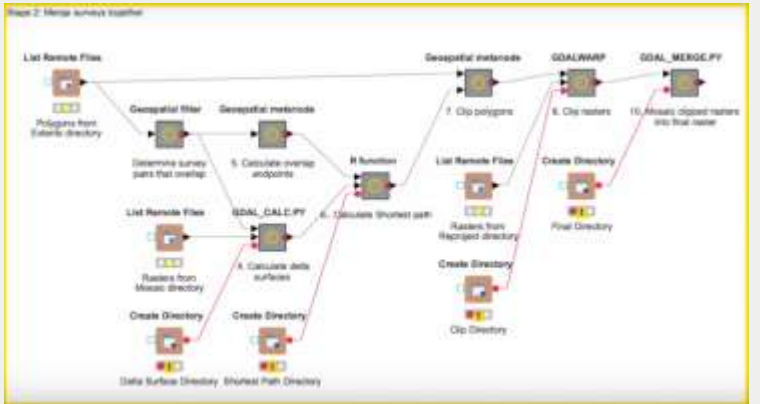
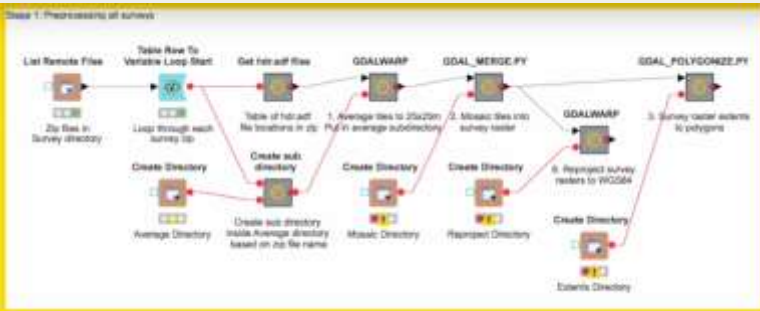
1.1.2 Restrictions

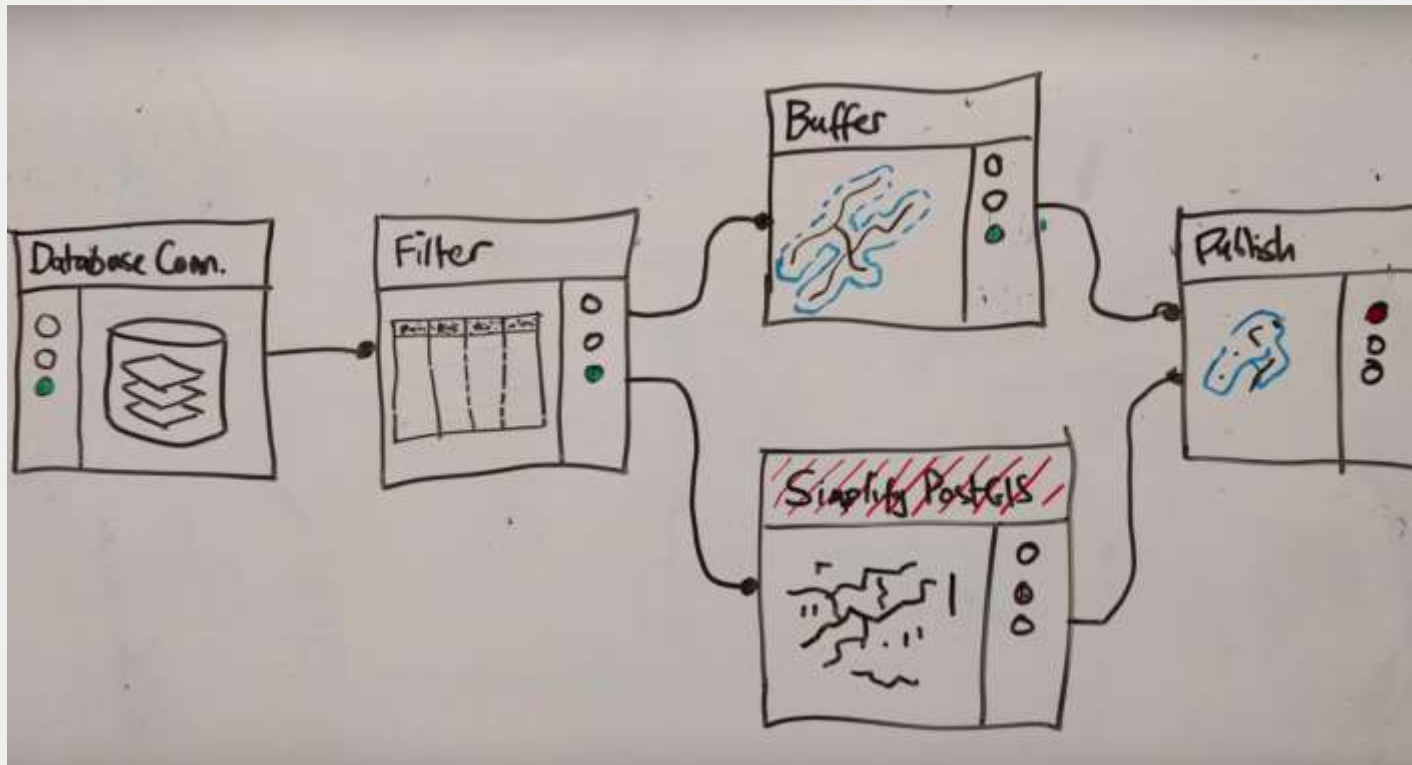
The initial focus has been limited to coastal laser surveys provided by CRC-81. This report contains detailed analysis of a study area containing the four surveys surrounding Bundamba, Queensland.
The software used is ESRI ArcGIS, and Python.

1.2 Inputs

The primary DEM file used for the first processing step are rasters with a 1-metre horizontal resolution and approximately 10cm vertical accuracy the horizontal extent is either 1 or 4 square kilometres. A minority of surveys have 1-metre resolution raster rasters.
The projection of all DEMs is Geoscience Datum of Australia (GDA94) datum and they are within all Map Grid of Australia (MGA) zones 49 through 58.

The final step will generate 25m resolution rasters including all data from each laser survey project.





RESEARCH: TEAM

RMIT University

Geoscience Australia

San Diego Supercomputer

Centre

Key features

- **Value uplift modelling:** Users can investigate potential value from hypothetical addition of infrastructure.
- **Interactive scenario exploration:** The tool's dashboard interface will allow easy comparison between different development scenarios and their projected value uplift.
- **Collaborative planning:** Rapid and interactive visualisation of property values, potential value uplift, and other relevant data layers can facilitate communication and collaborative planning with different user groups. Development of 3D visualisation for the toolkit is currently being explored.
- **Cloud-based architecture:** RAISE's back end is built on open , cloud-based architecture that enables the toolkit to link diverse property and geospatial data to models and visualisations.

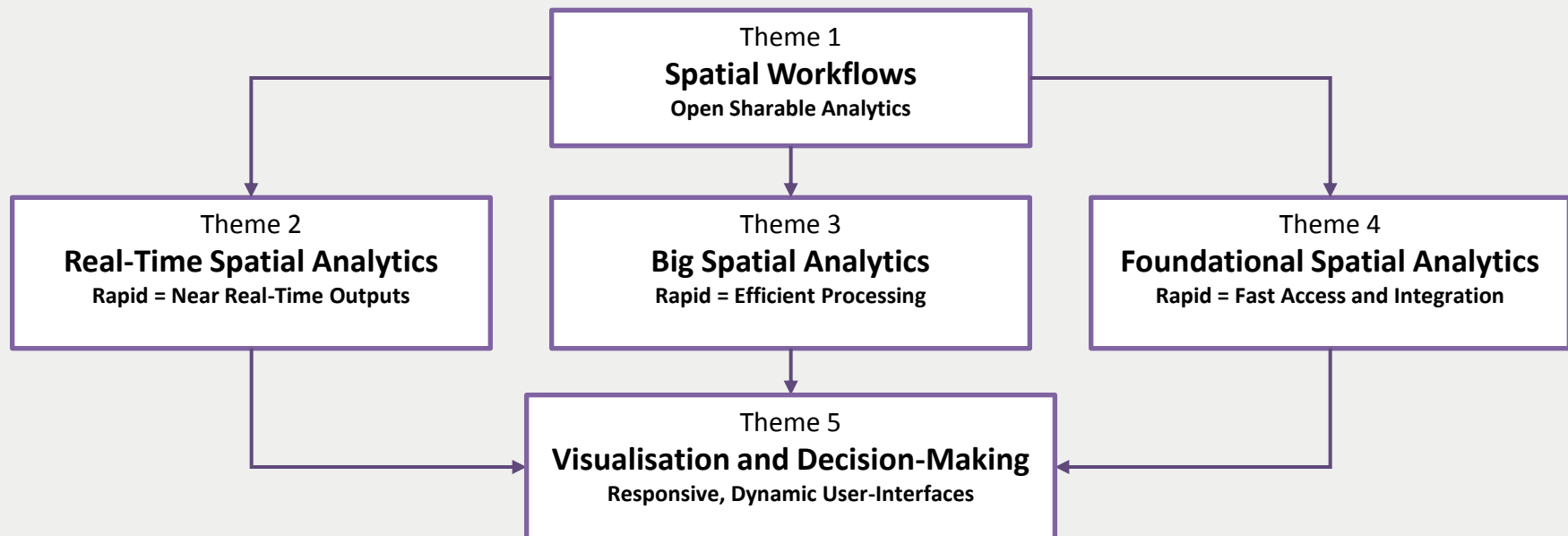
Value uplift comparison between two hypothetical train stations



Toolkit development and research are collaboratively undertaken by **UNSW's City Futures Research Centre** and **QUT's Creative Industries Design Lab**. The project team is working with industry partners **Australian Property Monitors** and **Omnalink**, and government partners **NSW Land & property Information** and **Parramatta City Council**.

Rapid Spatial Analytics Themes

OBJECTIVE: To conduct research that improves the ability and efficiency of government and industry to rapidly create, and add value to, spatial information products



Our Research

Learn from the Past

Automated State of the
Environment Reporting
**Query and Explore
Data Archives**

Monitor Now

Patterns of People
Movement in Real-Time
**Where Are People
Going?**

Work Together

Open, Cloud-Based
Spatial Analytics
**Collaborate and
Share Processes**

Explore the Future

Automated Property
Valuations
**Interactive Scenario
Explorer**

Real-Time People Movement

- Building real-time movement analytics
- Real-time user triggered responses on specific patterns of movement, crowding or dispersal
- Providing real-time monitoring and responses

Urban Planning Analytics

- Working on a commercialisation plan for RAISE
Looking at land value uplift, scenario exploring and land valuation
- Benefits for councils, state planning and land valuation offices

QA4 – End User Workflow Management

- QA4 Suite – QA4LiDAR, QA4MOBiLE and QA4UAV
- Building standards and improving data quality
- Working on commercialisation model once QA4UAV is approved

Summary: Open Spatial Analytics

- Buildings sharable workflows
- Increasing collaboration & sharing
- Increasing transparency
- Providing fit-for-purpose assurance to users
- Enhancing scalability
- Reducing duplication
- Integrating diverse software operations

Thank You!
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