



**Trust, but verify**



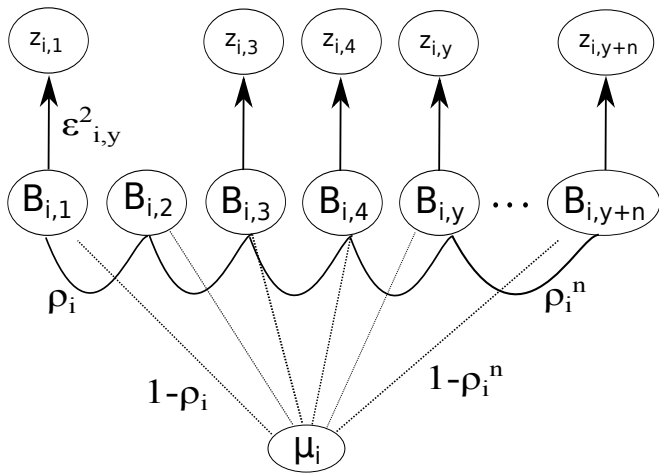






# Statistical analysis

Time-series modelling



Report published by the  
Ministry for Primary Industries  
New Zealand Fisheries  
Assessment Report 2015/15

### 3.8.1 Cockles at Umupuia Beach

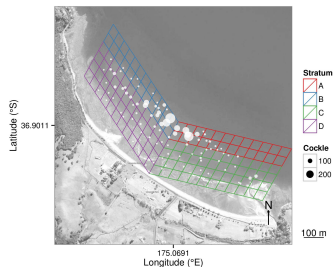


Figure 24: Map of sample strata and individual sample locations for cockles at Umupuia Beach, with the size of the circles proportional to the number of cockles found at each location. The grid within each stratum was used to stratify the sampling, with one sample randomly allocated within each cell per sampling phase.

Table 34: Estimates of cockle abundance at Umupuia Beach, by stratum, for 2013–14. Presented are the number of points and the number of cockles sampled, the mean total estimate, the mean density, and the coefficient of variation (CV).

Stratum	Sample		Population estimate			
	Area (ha)	Points	Cockle	Total (millions)	Density (m <sup>-2</sup> )	CV (%)
A	5.8	35	1 058	50.01	856	35.24
B	5.4	31	1 066	53.05	974	34.96
C	11.7	48	338	23.30	199	26.91
D	10.9	48	652	41.91	385	24.97



**Culture, and process**

**Culture.** Draw on our  
independent science roots





**Process.** Draw on experience  
from software development



**Collaboration**



Software companies

Follow the rules

Isolated  
researcher at  
University



**Autonomy**

**Collaboration**



Software companies

Oxymoronic  
sweet spot

Follow the rules

Isolated  
researcher at  
University



**Autonomy**

# Traditional independent research

Turning data into diamonds





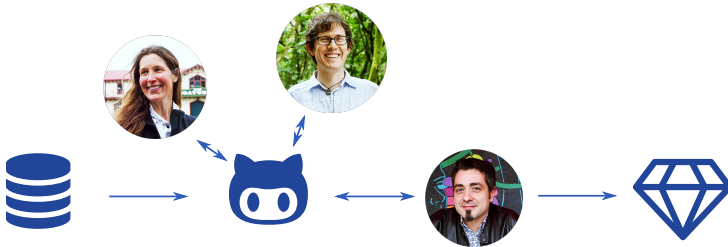
# 'Build better software together'

The power of Git and GitHub



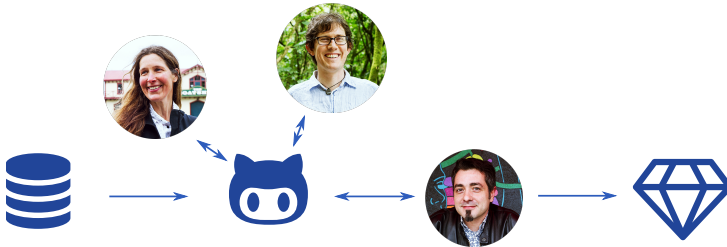
# Building trust

Git for collaboration and communication



# Building trust

Git for collaboration and communication



“We estimate that having the knowledge in - house will increase the teams productivity in generating future reports by 70%.” – Vij Kooyela, Ministry of Business, Innovation & Employment





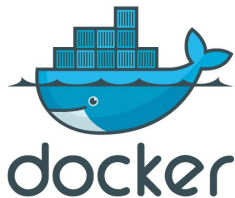
# Open Science

Open Source // Open Society

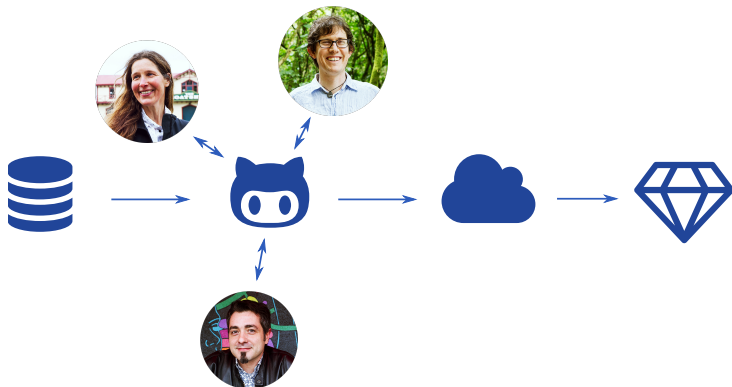
Research is published with data and code so that others may **verify** the findings

# Verification through automation

Automate for reproducibility



# Data, to code, to cloud, to diamonds



Diamonds every time

