Ecohacking cities:

Data science for sustainable cities and a preview of the Environmental Sustainability Platform

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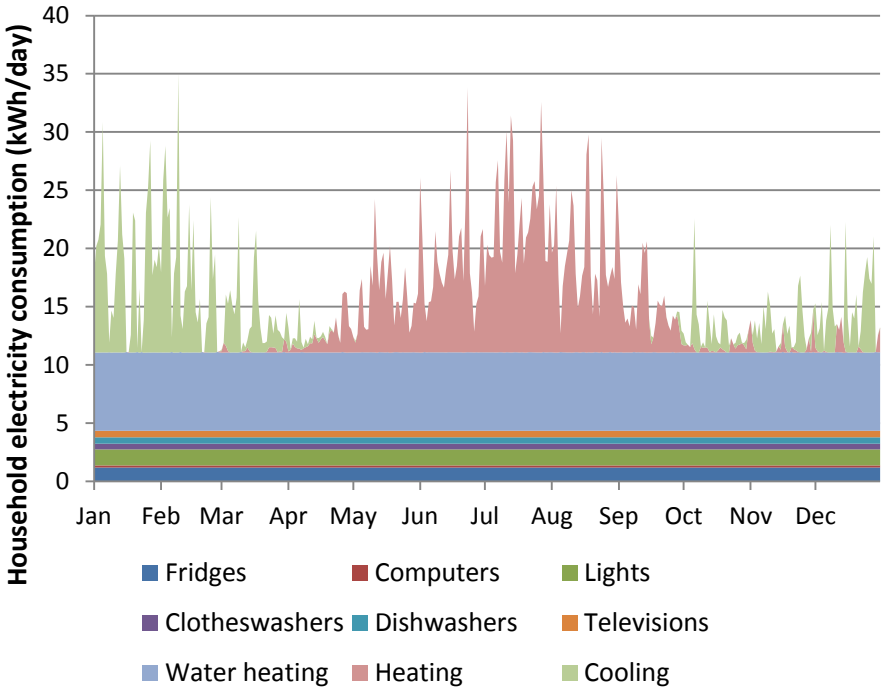
Ecohacking:

the application of data science to solving sustainability challenges

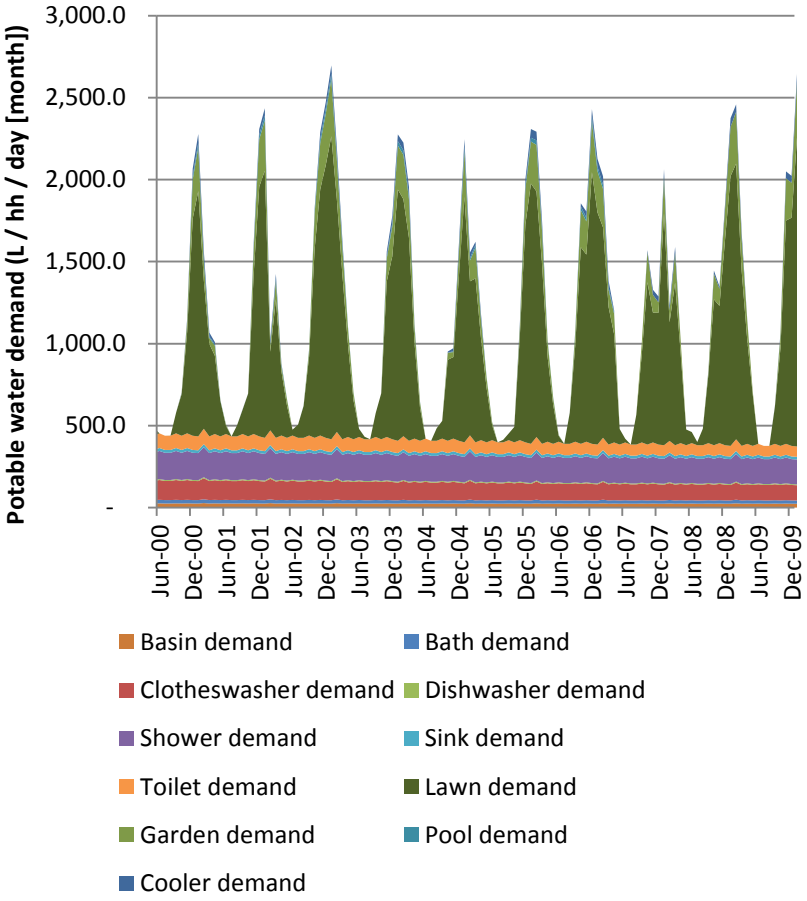
- Bottom up: resource simulation
- Top down: statistical learning
- A preview: cloud-based analytics and visualization

Bottom-up: resource simulation

Simulated energy consumption

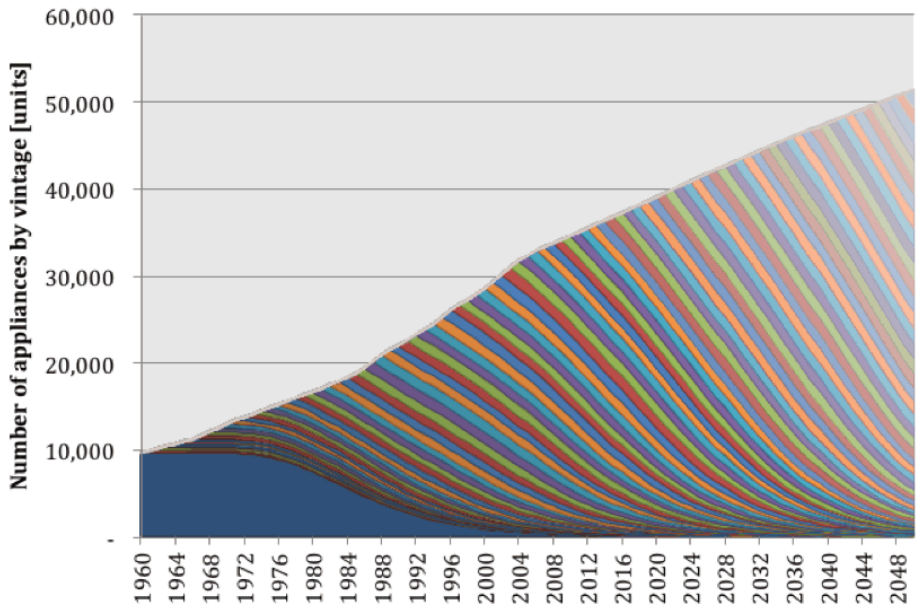


Simulated water consumption

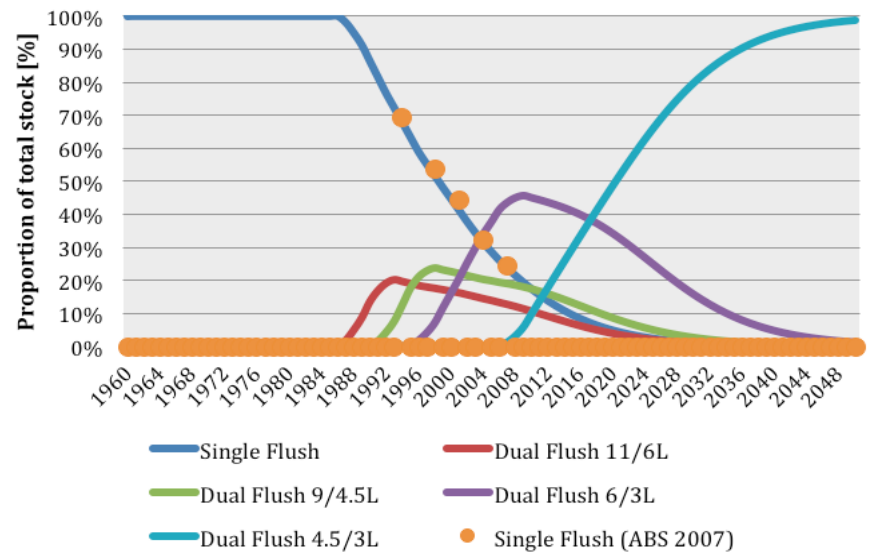


Bottom-up: resource simulation

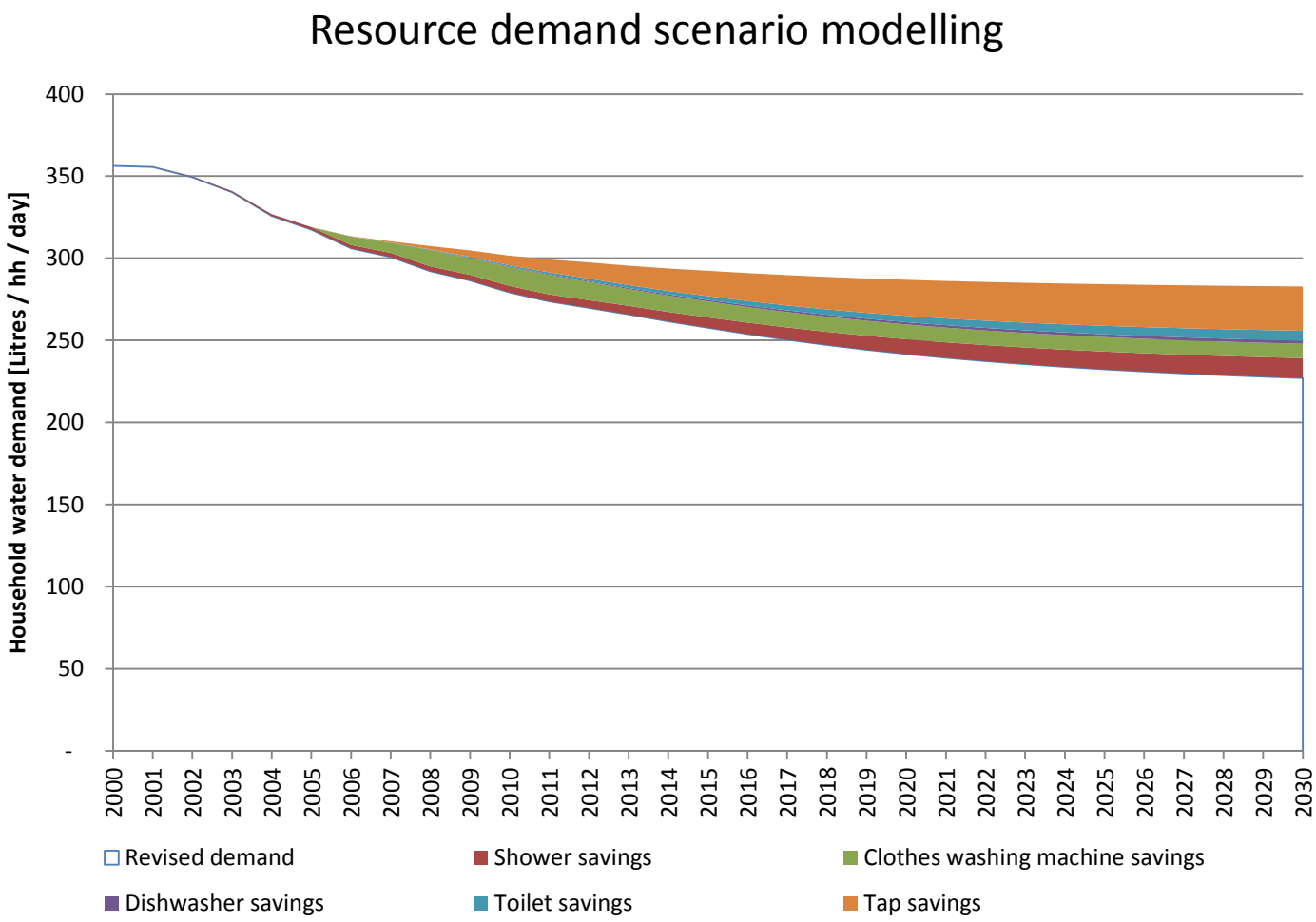
Cohort-component stock modelling



Simulating appliance turnover

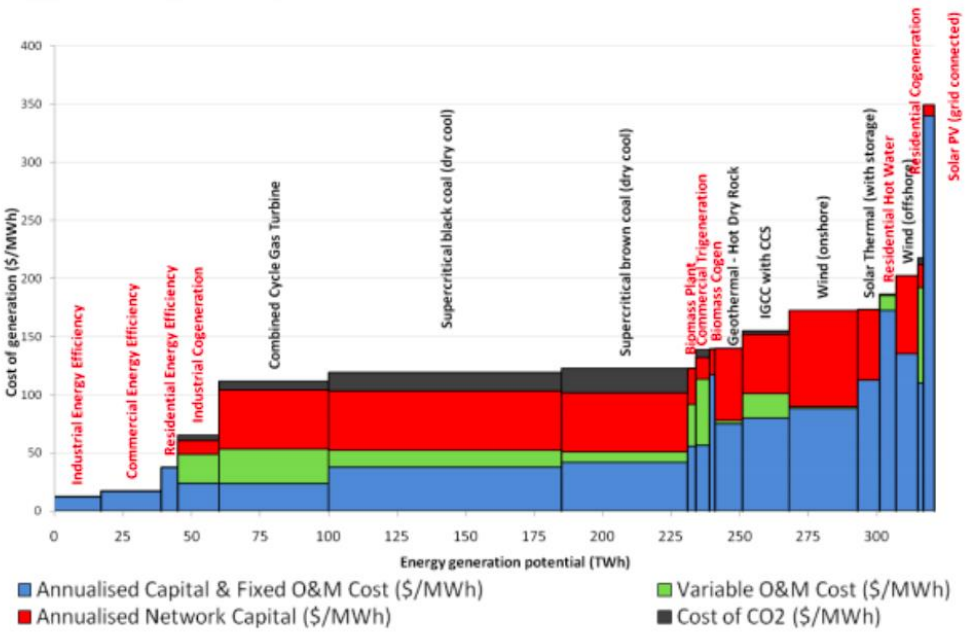


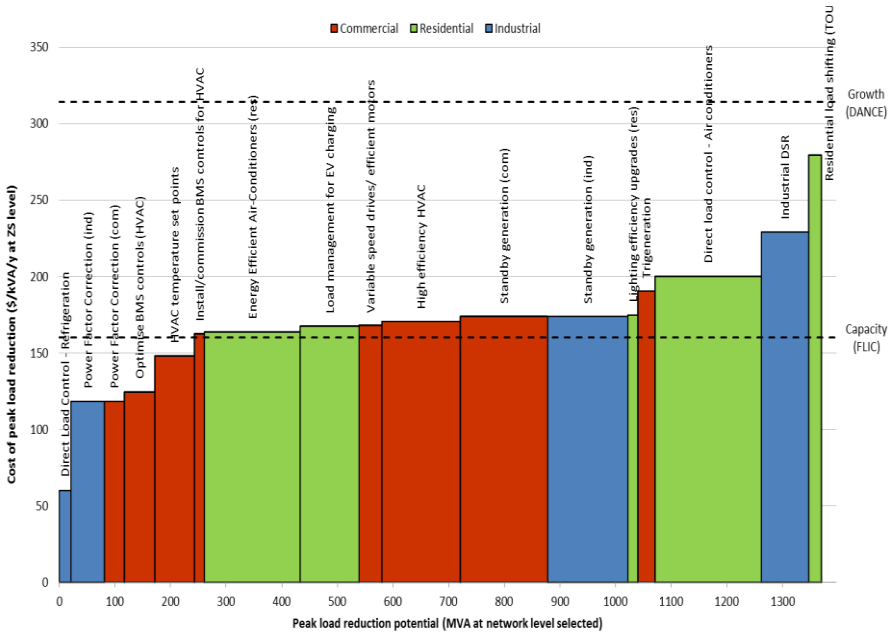
Bottom-up: resource simulation



Bottom-up resource simulation

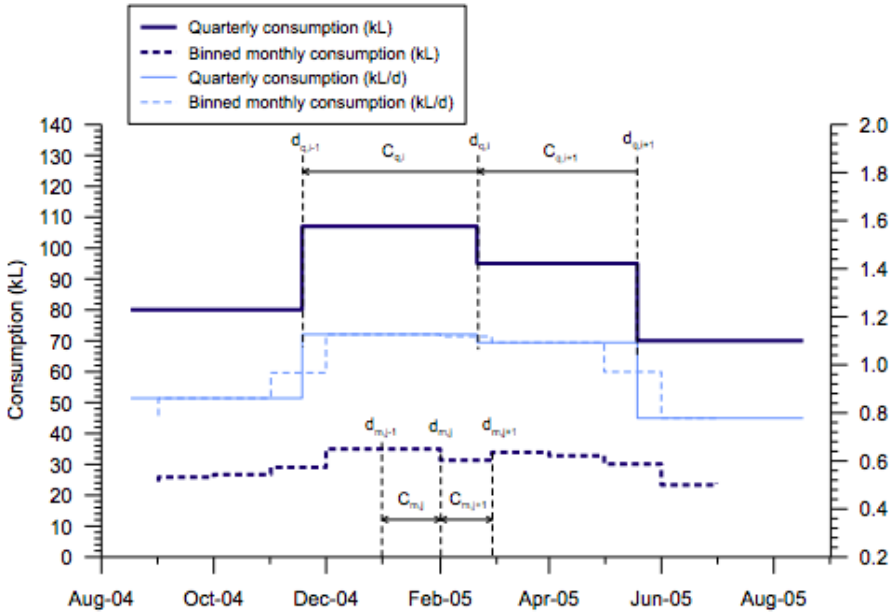
Integrated (physical-economic) strategic assessment





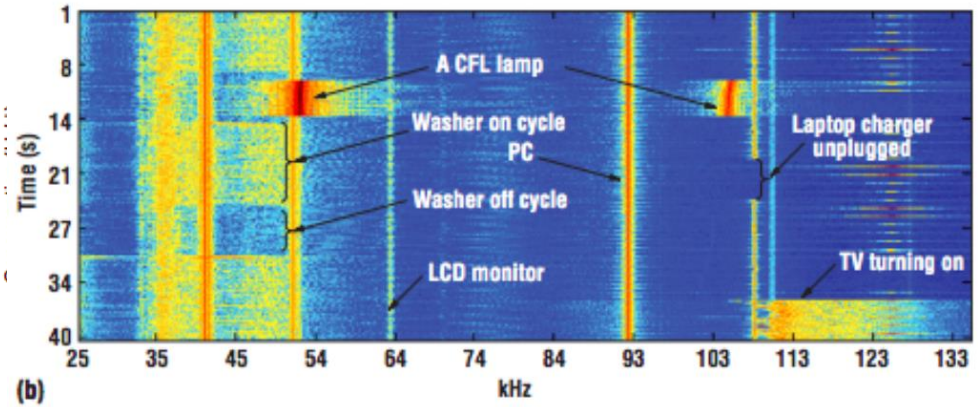
Top-down: statistical learning

'Dumb' meter data binning



Enhances temporal resolution of quarterly meter readings

Smart meter data disaggregation



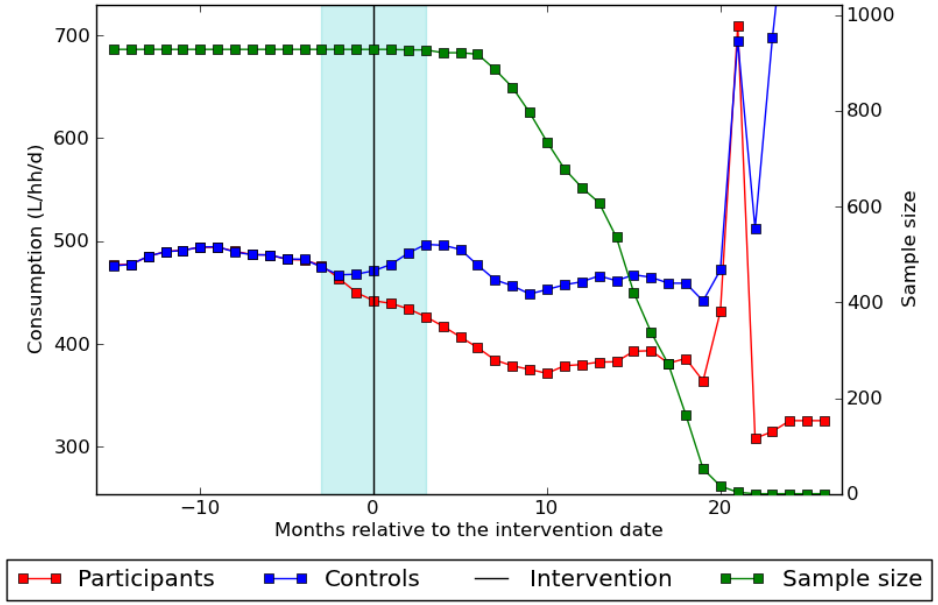
Extracts disaggregated end use insights (e.g. shower frequency, duration) from aggregated smart meter data

Top-down: statistical learning

Machine vision for detecting roofs, pools, gardens

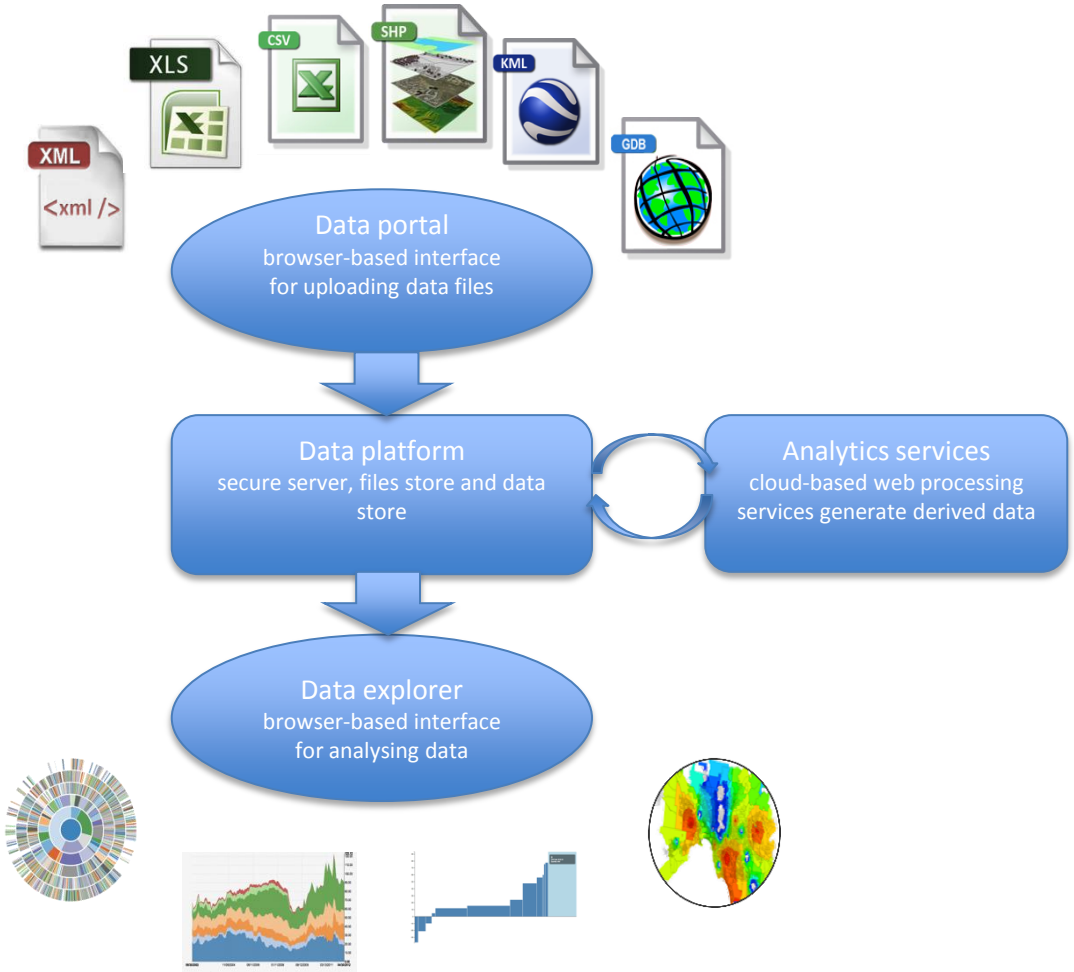
Top-down: statistical learning

Matched pairs savings evaluation



Participant-control based statistical evaluation of the energy / water savings of efficiency programs

A preview: cloud-based analytics & visualization



Both open source:

github.com/ckan/ckan

github.com/TerriaJS/terriajs

Ecohacking:

Data science at the UTS Institute for Sustainable Futures

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