crc•si Spatially Enabling Australia and New Zealand

P3.02 | Crowd-sorting Spatial Information

Project Leader Dr David McMeekin, Curtin University; Kylie Armstrong, Program Manager (CRCSI)

Research Team Hamish McNair, Geography, University of Canterbury; Dr Ioannis Delikostidis, Dr Lukas Marek, University of Canterbury; Dr Lesley Arnold, Curtin University.

Project Participants Spatial Infrastructures – Supply Chains

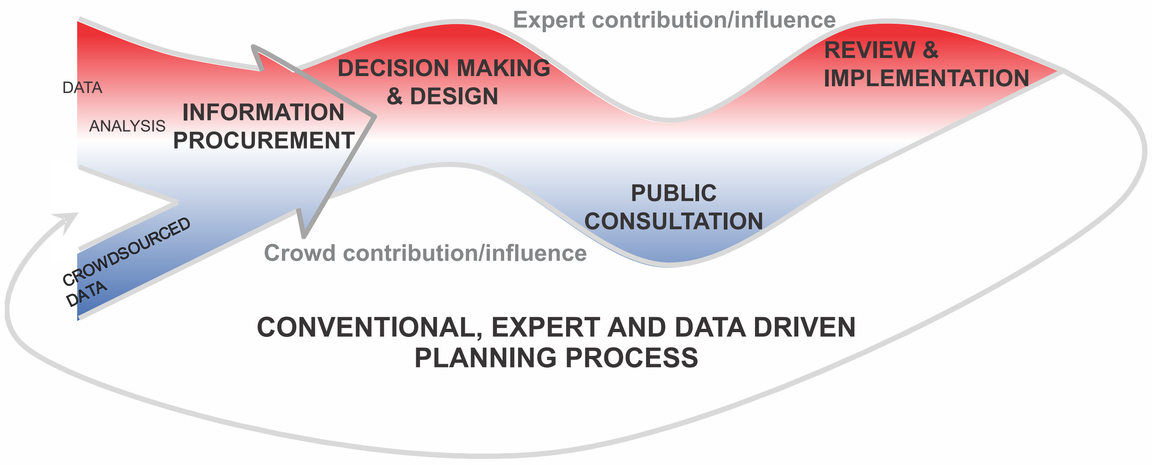
Objective To produce crowdsourced spatial information that is both representative (of the crowd) and useable (by planners).

Outcomes
- Provide planners with information that accurately defines the needs of users
- Enable users direct input into decision making and design processes
- Create crowdsourced spatial information that complements existing planning processes

The Situation

Existing planning processes are largely expert and data driven. However, the needs of users can be difficult to ascertain from data, analysis, and expert interpretation.

Unfavourable planning decisions can be made before traditional methods of public consultation are undertaken.



Including information from the crowd early in the planning process provides a means of mitigating expert bias.

Crowd-sorting aims to produce representative and useable crowdsourced information that can inform and compliment planning processes.

Crowdsourced data alone does not provide users with sufficient influence over decision making and design processes because deriving information from this data still requires substantial input from experts.

Crowdsourced spatial data, such as that from Strava indicating cyclist volume (left), does not provide information about how cyclists consider infrastructure is performing.

High volume does not necessarily equate to well performing cycling infrastructure.

Crowd-Sorting Methodology

Spatially arranging comments from the public – linking information to the area it concerns – aids planning processes by providing local insights about specific places.

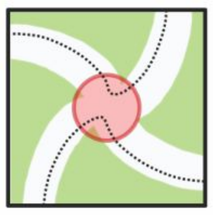
Crowd-sorting relies on the interaction of people with a place, and with information describing that place. The process is described here using a mobile app that records a cyclist's route and allows them to submit points indicating their positive and negative experiences.

When a cluster of points forms, users are able to comment (via web app) on the location it represents.

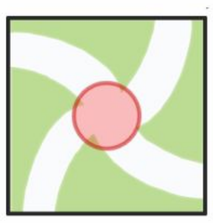
Comments are voted on by all users depending on whether they agree (up vote) or disagree (down vote) with them.

Tier 1 users submit "negative" points

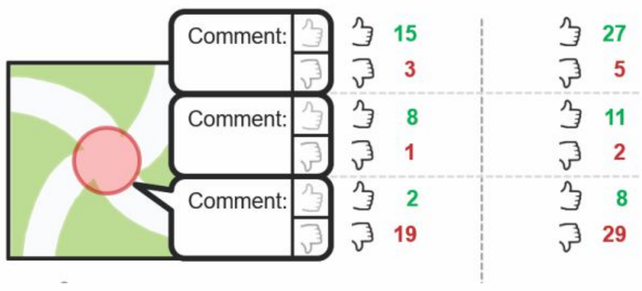
Tier 2 users pass through the "negative" cluster that forms, but don't contribute points.



Tier 3 users haven't been to the site (they may, however, be familiar with it or know of similar situations to those being described).



Depending on the user's tier, votes assist in (i) verifying that observations or thoughts are relevant to this site ($T_{I, II}$) and (ii) ranking comments in order of importance to provide a crowd-centric perspective of a site ($T_{I, II, III}$).

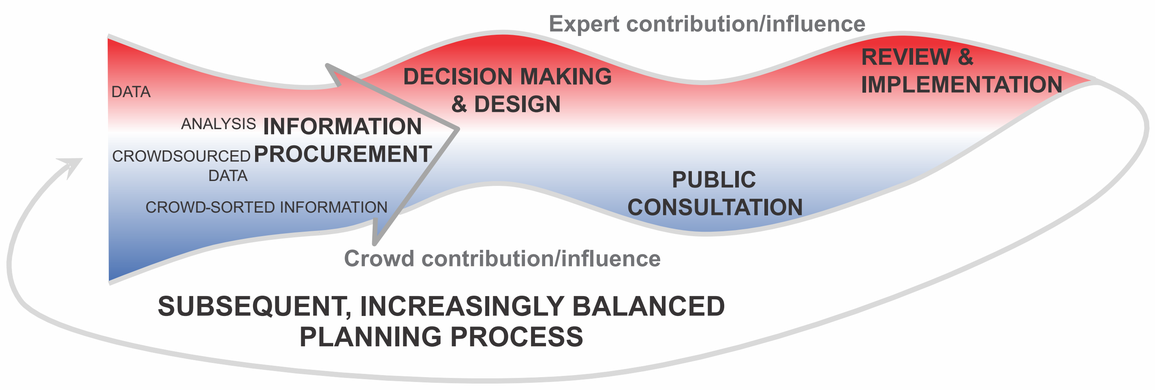


User Tier	Submits +/- Points	Knows the Site	Can Provide Comment	Provides Verification	Ranking Voter
1	✓	✓	✓	✓	✓
2		✓	✓	✓	✓
3		?	✓		✓

Intended Effect

The spatial information that results from crowd-sorting is both representative (of the crowd) and useable (by planners).

This has the potential to produce a more balanced planning process by not only identifying the sites most important to users, but also the most relevant issues at each site.



The feedback from "positive" sites allows infrastructure that is performing well to be identified and for user preference to influence future planning decisions.

The spatial nature of crowd-sorted information enables problems with general design (similar issues across multiple sites) to be separated from problems with site-specific design (issues unique to one site).

43pl
Australian Government Department of Industry, Innovation and Science
Business Cooperative Research Centres Programme