

Model-enabled community engagement in a mining approval process

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Abstract: Participatory Modelling (PM) can help regulators and communities move toward more positive futures by making stakeholder engagement more meaningful, efficient, and informative (Sterling et al, 2019). We are partnering with industry and agency groups to drive two major innovations in this space: (1) developing a standardised, web-enabled reporting structure for PM processes, and (2) using “management flight simulators”. We are developing these tools to provide an objective, transparent and flexible process where a diverse group of stakeholders can rapidly understand and meaningfully contribute their local knowledge to an early-stage mining or energy development proposals.

There are many types and variations of PM, and their value has been amply demonstrated in natural resource management and protection contexts (Voinov et al, 2018). One of the difficulties limiting a wider adoption of PM is the lack of consistent reporting about the engagement processes to enable others to avoid pitfalls and replicate successes (Glynn et al, 2017). This issue led Glynn et al (2018) to call for a new type of record to document PM processes and outcomes, which they term Records of Engagement (RoE).

We are responding to this challenge within an important real-world application, through which we explore how tools such as discourse analysis, mental model maps and data visualisation can be combined to create RoEs that capture and communicate the complex information and relationships uncovered during a given PM case-study. Using the experience gathered in this application, we will develop an adaptable RoE template and guidelines to encourage the adoption of RoEs in future collaborative modelling projects.

Effective and useful RoE’s require an electronic and highly adaptable format, and creatively apply information visualisation tools to communicate complex information, trends and ideas. Fundamental beliefs of the stakeholders and engagement leaders such as their world view, knowledge about the subject, personal values, heuristics and potential biases will be measured, anonymised and reported to unlock understandings about the engagement results. One Bayesian aspect which we are exploring is stakeholder’s willingness to change their minds when new information is presented. These aspects will be measured through progressive surveys, structured interviews and analysis of stakeholder communications as the engagement process unfolds.

The other major innovation in this project is to apply PM in an Australian development planning approval context. A major perceived shortcoming of current planning approval processes in Australia is the lack of meaningful stakeholder engagement beyond invitations to submit written comments once the Environmental Impact Statement has been published (Walsh et al, 2016). We are working with a number of sponsors to address this fundamental issue by applying “management flight simulators” (Castilla-Rho, 2017) and other collaborative modeling tools to enable efficient and effective stakeholder engagement in the scoping phase of a real NSW planning approval process. If successful, the ability to quantify thresholds of concern has potential for transformative improvements in the strength and transparency of approval decision-making. We are therefore designing the engagement framework in this project to become an adaptable prototype to encourage model-enhanced stakeholder engagement in future mining and energy developments.

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