

Centre for eResearch and Digital Innovation

This submission to the EPA inquiry seeks to broadly address the Terms of Reference within the context of the role of EPA Victoria in making environmental data more discoverable and accessible. The Centre for eResearch and Digital Innovation (CeRDI) at Federation University Australia (FedUni) is a global leader in data interoperability and has developed many award-winning web-based information and knowledge portals which provide free public access to data sets that are often hidden from view. The portals include EPA data such as Certificates and Statements of Environmental Audit (commonly termed Audit Reports), Groundwater Quality Restricted Use Zones in Victoria (GQRUZs) and the Priority Sites Register.

At present, some of the EPA data that is accessible via the EPA Victoria website has limitations in that it is not easily discoverable, not spatially searchable (i.e. via a web-GIS interface) and limited by the format in which the data is delivered.

For example, data on groundwater and soil contaminants is currently accessible in the Audit Reports submitted by the Environmental Auditors, stored in a searchable database on the EPA website (see <http://www.epa.vic.gov.au/our-work/environmental-auditing/53v-reports-certificates-statements-of-environmental-audit>). However, the data is locked into a file format (*.pdf) which is not globally searchable (e.g. search for all sites in Victoria with Arsenic analyses, etc.) and therefore limited in its usefulness. Nor are the reports and the data they contain visible on a geographic map (e.g. Google maps), which also restricts their discoverability, especially as the user has to know a specific property address to search for.

By contrast, these valuable resources have also been made much more easily discoverable via several web portals developed by CeRDI, such as:

- Visualising Victoria's Groundwater www.vvg.org.au
- Corangamite Soil Health Knowledge Base www.ccmaknowledgebase.vic.gov.au/soilhealth/
- Visualising Ballarat www.visualisingballarat.org.au/

Of these, the EPA data is accessed on a daily basis by users of the Visualising Victoria's Groundwater (VVG) website. The VVG portal federates all publically accessible groundwater data for Victoria, thus making legacy data, government datasets, research data and community sourced data and observations visible to the public. The portal is innovative because it was developed outside of the government and offers real-time access to remote authoritative databases by integrating the interoperable web services they each provide. It includes tools for data querying and 3D visualisations that were designed to meet end-user needs and educate the broader community about a normally invisible resource.

The impact of the VVG web portal was measured using multidisciplinary research that employed survey instruments, expert reference groups, and internet analytics to explore the extent to which the web portal has supported decision making by governments, industry, researchers and the community. The research found that single access, multiple data set web portals enhance capacity by providing timely, informed and accurate responses to answer queries and increase productivity by saving time. Thus, the provision of multiple datasets (including EPA data) from disparate sources within a single portal has changed practices in the Victorian groundwater industry. A peer-reviewed scientific paper detailing the results of this research has been published in the Journal of Hydroinformatics, available at: www.iwaponline.com/jh/up/jh2015169.htm

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EPA Victoria clearly has a role as the custodian for environmental data in Victoria, including data curation and management. It is our contention that the EPA also has a role in making this data discoverable to interoperable web portals so that it can be integrated with the plethora of other data that is used to enhance decision making in other disciplines. Such examples extend beyond the soil, water and natural resource management portals developed by CeRDI, to include others that are used by a range of private industries, public agencies and research institutions. In addition, these data can feed into web-based tools or mobile applications that could dynamically generate state of the environment indicators for any place in the landscape, including agricultural land quality indicators, waterway, wetland and estuary health indicators, groundwater quality, air quality, and so on.

While probably desirable from an agency point of view, it is not essential that the EPA make the data available via a spatial mapping portal. We argue that it is more important that the EPA data is made discoverable and interoperably available, preferably via web services based on open standards. For most (perhaps all) applications, the key value in the EPA data is only apparent once it has been combined with the exponentially growing plethora of environmental data, much of which is collected by sensors (e.g. satellites, in-situ probes, sensors on or in animals, remote sensing drones, etc.). The value of making EPA data openly available, especially in a way that ensures its currency, authority and integrity, has been clearly demonstrated through the VVG research.

Hence with improved data curation, management and provision of data via interoperable web services for consumption in external web portals, the EPA could:

- improve regulatory efficiency and minimise regulatory burden by improving the discoverability and interoperability of data so that it becomes decision-useful and hence empowers industries with the capability to make timely, informed and accurate responses while increasing productivity by saving time;
- support new approaches for the EPA to carry out its role in relation to public health issues by responding with evidence based information in areas of community concerns, as well as the prevention and management of site contamination, air quality, and water quality in rivers and other waterways; and
- better meet the Victorian community's and industry's expectations of the EPA as its environmental regulator.

Should further clarification be required, please contact:

Dr Peter Dahlhaus

Senior research Fellow

Centre for eResearch and Digital Innovation

Federation University Australia

Mt Helen, VIC, 3350



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