Moving toward a viticulture data standard

The challenges and benefits of platform interoperability

Technological developments can enhance vineyard management practices by utilising data to improve ease of operations that lead to greater efficiencies. **Simone Madden-Grey** outlines some of the new approaches seeking to improve the integration of data management tools.
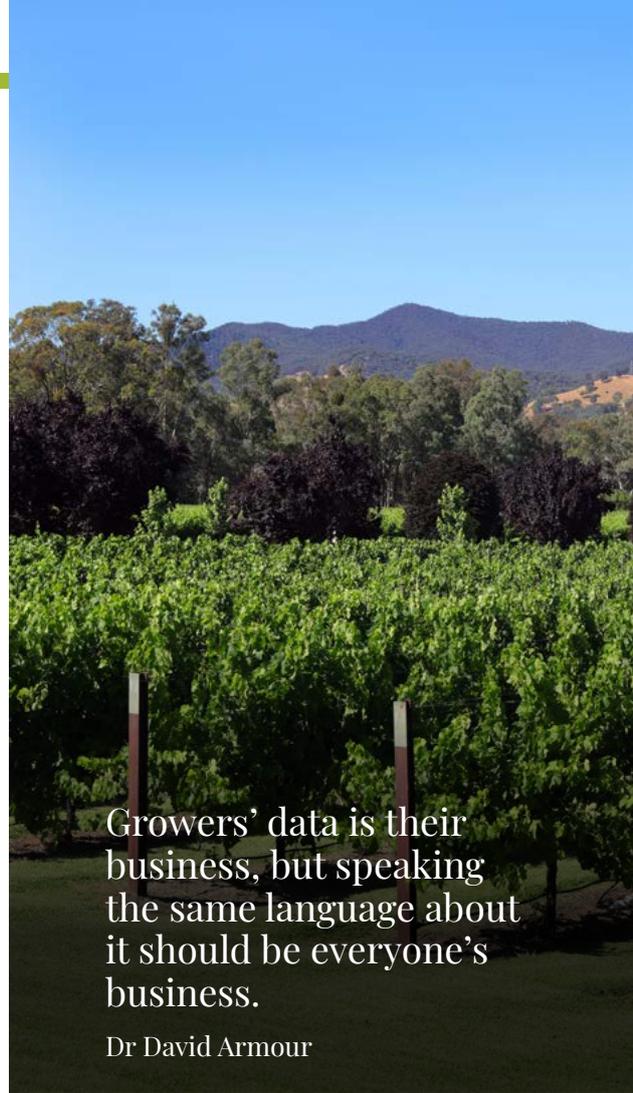
Advances in viti-specific technology have demonstrable gains for the wine industry that include increased operational efficiencies, quality data for research and biosecurity, and improved certification and credential management. Digital and geospatial mapping is the foundation upon which much of this technology is built in preparation for the addition of data from other technologies, and herein lies the challenge. For multiple technology platforms to move and share information easily, an established protocol for structuring the data must be in place.

Collabriculture, South Australia

If data is structured in a manner unique to a particular technology, the task of sharing data between technologies invariably requires some form of integration software to bridge the gap. The Collabriculture group in South Australia has worked to address this with the Open Vineyard Data Model project, which focused on standardising data management and presenting that format as a common foundation on which new technology is built. Descriptions of essential vineyard infrastructure were agreed with key stakeholders in order to create digital maps with meaningful data for practical application. In doing so, a protocol for structuring data and a single opensource repository of digital maps and geospatial data for vineyards has been created.

The next project under the Collabriculture umbrella is the Open AgMaps project in McLaren Vale. Platfarm has been tasked with mapping vines, vine row numbers, row groupings into blocks and block grape varieties for all vineyards in the McLaren Vale GI. This level of granularity marks a significant milestone because it is at the vine level that many operational decisions are made. The project will also include mapping of Sustainable Winegrowing Australia compliance features.

In addition to the digital mapping activity, Platfarm is also building an interface that developers can easily connect to in order to integrate Open AgMaps data. For the grower it will appear as a button for sharing Open AgMaps data with an approved third party. In the absence of a common language for technology platforms, this provides a key interim measure to support moving and sharing data, while reinforcing the need to advocate for the use of Collabriculture protocols when developing new technology. Lyndsey Jackson, Platfarm CEO, confirms consent and authentication protocols will be in place on the Open AgMaps interface, placing growers at the centre of choosing who they share their data with. Future plans also include working with BitWise Ag and DataFarming to integrate data from Open AgMaps into their systems.

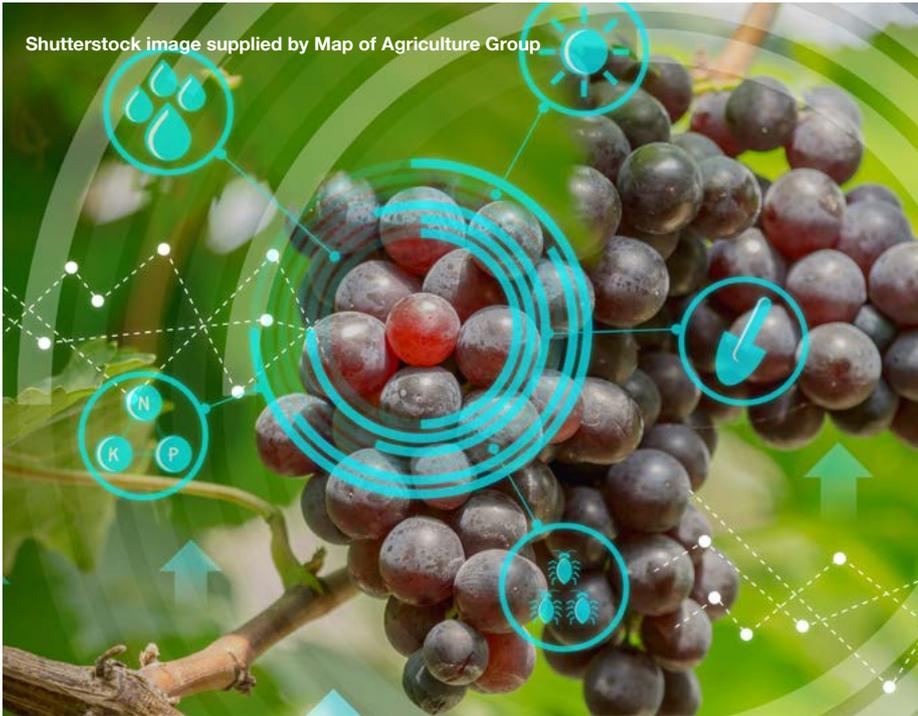> Growers' data is their business, but speaking the same language about it should be everyone's business.
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> Dr David Armour

Shutterstock image supplied by Map of Agriculture Group

Open AgMaps will function as a proof of concept, having the potential to offer significant value to the industry as a whole. Lessons learned could be leveraged by other states in providing this resource to their viticulture and technology communities. It is in the one-to-many model that efficiencies are realised for the end user and this can only be easily achieved if standardised, interoperable mapping protocols are in place.

New Zealand approaches

In New Zealand, Andrew Cooke managing mirector (NZ, Australia) and CTO of Map of Agriculture Group has worked for a number of years on data standards and interoperability for agriculture, and most recently for viticulture. Cooke says there is much to leverage from existing technology but the focus for viticulture is on enabling software tools to talk to each other. Most tools a grower uses will start with a map and while other clients Cooke works with may only require specification down to the block level,

he says row and vine mapping will be fundamental to vineyard job tasking information. Where GPS only provides location coordinates, the combination of specific location, attribute, and time or life span information that defines geospatial data, makes it an essential tool for vineyard task management. In this way, standardising the structure of geospatial data becomes fundamental to easily sharing data between different technologies used in the vineyard.

In addition to the data standardisation and interoperability work co-funded by industry, Map of Agriculture Group have also built a data integration platform. The Pure Faming application aims to streamline the data integration process while adhering to the opensource data specifications. Ready-built software integrations, components and solutions are available for developers to build into their tools, thereby reducing the amount of work required in developing new technology. The application currently supports a variety of crops as well as agricultural and horticultural activities.

Cooke says the Pure Farming application has most of the data elements necessary to support viticulture and plans are in place to include viticultural integrations in the coming 18 months. The application creates a one-off integration of data by the end user, for example a grower, which then allows for permission based data sharing across multiple platforms in order to generate a holistic view of operations.

Bragato Research Institute

"Growers' data is their business, but speaking the same language about it should be everyone's business", says Dr David Armour, Research Programme Manager at Bragato Research Institute (BRI) in Marlborough. Drawing on his experience of working with data standards and interoperability in agriculture, Armour says that bringing a common format to data structure is invaluable to the wine industry. A challenge that is often encountered when new technology develops data standards within the confines of the technology itself, is the inevitably of those data standards becoming proprietary. This leaves the end user, or grower, with a choice of either duplicate data entry across different technology platforms or purchasing integration software to manage this.

In addressing concerns about data privacy when discussing data interoperability, Armour highlights an important distinction between data structure and data utilisation. Standardising the format used by technology developers to structure data will streamline the process of sharing data across multiple platforms, bringing with it greater efficiency, transparency and detail. How data is utilised by businesses is where individual opportunities to capitalise that asset exists.
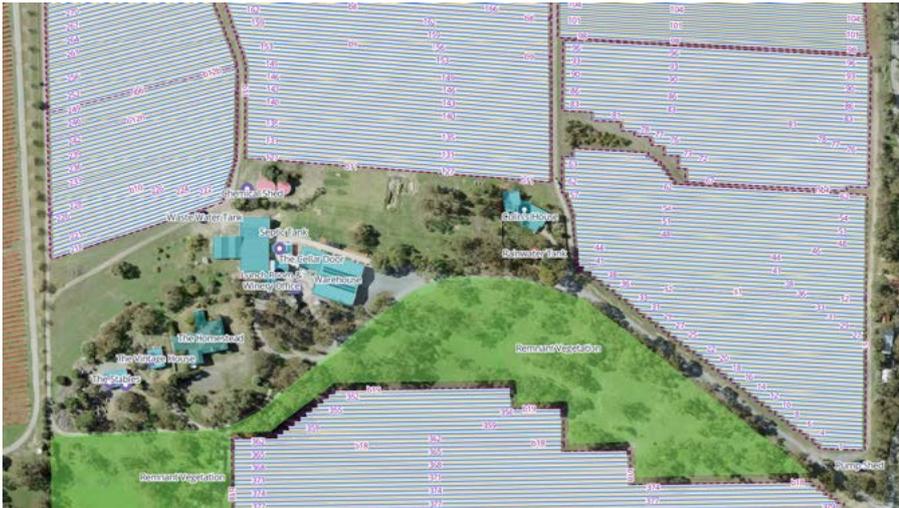
At BRI a project primarily investigating trunk disease has also been working on digital mapping standards. To generate data for the trunk disease project, a map that counts vines by rootstock, age
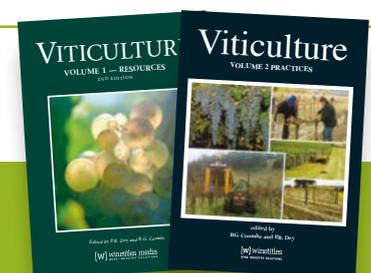
Open AgMaps. Image courtesy of Open AgMaps

The ability to easily integrate disparate sets of data for compliance, research, biosecurity, daily operations and so forth is undeniably beneficial for the grower directly and the industry as a whole.

and management approach was required and it was decided to collect the vine data using the Collabriculture data standards. A final report and case study evaluating this approach is due shortly and has the potential to influence future methodology for mapping vineyards in New Zealand.

Industry role in data standards

On the surface it may appear that data standardisation and interoperability are not directly relevant to vineyard operations but advocating for its use will produce very tangible benefits for growers. The ability to easily integrate disparate sets of data for compliance, research, biosecurity, daily operations and so forth is undeniably beneficial for the grower directly and the industry as a whole.

Growers are often engaged by technology companies in the design and development of prototypes for new vineyard technologies. They consequently have a role to play in recommending the use of these opensource, standardised data

sources when working with technology companies in the early phases of development.

The challenge faced by the industry is two-fold; data integration across multiple technologies must be addressed as well as equitable access to new technology. Adopting the full suite of technology available to the industry should not be reserved for those of size or financial means to fund integration work. Therefore it is critical that industry leadership prioritise standardisation and interoperability of digital mapping and geospatial data in addition to growers advocating for its use. Failure to do so prevents the industry from maximising the benefits technology offers, whilst locking out a significant portion of growers from implementing new technology.

Simone Madden-Grey is a writer based in Melbourne, Australia writing about the people, places and stories she has discovered on her travels. Her portfolio can be found at happywinewoman.

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References and further information

'Collabriculture: an open and collaborative approach to technology in the wine industry'. Final Report to Wine Australia. Madgett, Oli. Platfarm, 26 November 2021.

Bragato Institute
website: www.bri.co.nz

Collabriculture website:
www.collabriculture.com

Map of Agriculture Group
website. www.mapof.ag

Open AgFarms website.
www.collabriculture.com/open-agfarms

Pure Farming website:
www.purefarming.com

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