case study

esri Australia

Growing profits and reaping rewards

Treasury Wine Estates

From vine to bottle shop, discover how location-based analytics is generating fruitful results for one of Australia's leading winemakers.

Project overview

Already one of the world's largest wine producers, Australian-based Treasury Wine Estates' (TWE) aim is to become the most celebrated wine company in the world.

To achieve this, TWE has cultivated an innovative, adventurous approach since the 1990s, utilising location-based analytics technology in its three principle activities: grape growing and sourcing, winemaking and brand-led marketing.

In 2014, as global supply and demand fluctuated and the alarming realities of climate change took hold, TWE again turned to Geographic Information System (GIS) technology to maintain its competitive edge.

Inspired by a Queensland sugar industry trial, TWE implemented Esri Australia's ArcGIS platform to streamline its harvesting processes and bolster productivity.

The technology has since been rolled out across a number of TWE's wineries including key sites in Coonawarra, McLaren Vale and Barossa Valley.

TWE is now exploring opportunities to use the technology in marketing, potentially fusing sales and demographic data to identify trends and new opportunities for the company's iconic wines.

TWE in focus:

Treasury Wine Estates is one of the world's largest wine companies, listed on the Australian Securities Exchange and producing acclaimed titles such as Lindeman's, Wolf Blass and Penfolds.

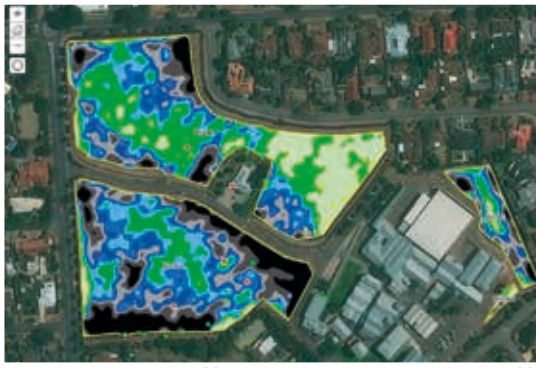
The global winemaking and distribution giant "makes, markets and sells wine".

Employing more than 3,500 people worldwide, TWE boasts an award-winning portfolio of more than 70 brands sold in over 70 countries, and harvests 14,000 hectares of owned and leased vineyards in internationally recognised regions.

TWE has pioneered the use of location-based analytics technologies within the agricultural sector, utilising GIS technology since the late 1990s.

> "The technology enables a more sustainable agriculture practice because we are smarter and more informed when it comes to planning for the future."

David Gerner, TWE GIS Specialist



> “Location-based analytics has strengthened our logistic planning, supply optimisation and scheduling processes, so we can better plan for harvesting and how we receive our fruit from the vineyards.”
>
> **David Gerner,** TWE GIS Specialist

The challenge:

For TWE, the definitive challenge has always been to continue improving the quality of wine it makes.

To take the guesswork out of the often split-second decision-making required in large scale winemaking, a real-time, map-based data system, easily accessible across the organisation, was required.

Essential to the system was the incorporation of accurate and timely data collected from the vineyards and wineries that, when analysed, could give decision-makers the flexibility to respond quickly to unexpected events.

For vineyard workers unaccustomed to specialised and complex technology, a user-friendly mobile data collection component was required that could upload information immediately to the central system.

To address these challenges, TWE requested:

- A real-time smart mapping solution that could track every stage of the supply chain from vineyard to winery, replacing notebooks used in the field and spreadsheets in the office.
- A centralised platform to standardise the approach to technology across the organisation, with templates and dashboards providing scalable solutions for different applications and users.
- An economical, mobile solution for ‘live’ data collection from TWE vineyards and contracted growers.
- Improved harvesting scheduling, with the ability to track the tonnage and location of machinery and trucks so winery managers are prepared when deliveries vary in weight or are early or delayed.
- The capability to accurately predict yield for the preparation of harvesting and crushing schedules and resource allocation.

The solution:

Esri Australia’s Industry Solutions team worked closely with TWE to better understand the company’s business and devise a solution to meet their exact business requirements.

Following this consultation process, a comprehensive smart mapping system was developed to monitor and manage the harvest, transportation and crushing of the grapes, empowering employees and reducing operational costs.

Centralised control system

A single-point-of-truth system featuring a series of dashboards provides maps and data for each stage of the supply chain.

Factors such as irrigation, temperature and soil conditions are layered over aerial imagery and base maps of the vineyards to report on the health and maturity of the vintage, delivering a complete visualisation of TWE’s operations.

These smart maps display the health and maturity of TWE’s vintage in real-time – allowing winemakers to optimise harvest strategies.

Mobile data collection

Mobile devices loaded with Esri’s Collector for ArcGIS application enable vineyard staff to record the progress of the grapes and harvest on-the-fly.

The data can be uploaded instantly to the central system or, if out of range, immediately once the user is back online.

Transportation management

An airport-like arrivals board tracks GPS-enabled vehicles, enabling crushing schedules to be modified for early or late deliveries, reducing the costly line up of trucks waiting to be offloaded.

The innovations:

To meet the unique challenges facing TWE, a number of technical innovations were developed.

1. Sensor-based analysis

TWE uses GIS technology and remote sensing observations to identify areas where grapes of similar quality can be harvested. Their maps inform the harvest process, enabling bins to be switched intuitively as grapes are harvested.

Devices fitted directly on to farm equipment also record data such as harvester location, down-time and speed and pour rate, which is regularly transmitted to the central system, enabling managers to keep track of which fields have been harvested, as well as the current and anticipated yield.

2. Live operations dashboard

A “geo-fence” – a virtual boundary that records the movement of GPS-enabled vehicles – has been created around TWE vineyards and wineries so when delivery trucks pass through, alerts are sent to the winery to notify and track their progress.

An arrivals and departures dashboard at the winery displays the real-time visual location of a truck and its estimated time of arrival, as well as when the load is scheduled for crushing.

The dynamic dashboard enables winery managers to make better decisions based on real-time information, such as adjusting scheduling to accommodate early or late deliveries.

3. Sales and marketing analytics to predict demand

To determine future areas of demand for events such as regional festivals or other celebrations TWE is developing a process to map and analyse sales patterns and customer demographics. Armed with these new insights, decision makers will be able to devise marketing and distribution plans to effectively target customers in those areas.

The outcomes:

- **A real-time view of the wine-making network.** Every stage of the winemaking process – from monitoring soil conditions in vineyards to crushing grapes in wineries – is now displayed in real-time. A harvesting dashboard displays vineyard data via a live map that details the location of machinery, the quantity and variety of grapes being harvested, and the estimated completion time. Crushing schedules are updated by automatic alerts about tonnage and delivery times from transportation trucks that are tracked from the vineyards to the wineries. The impact of natural disasters can be minimised by the addition of drone-captured imagery, integrated into the smart maps for swift inspection.

- **A single-point-of-truth for data.** The centralisation of data into interactive smart maps provides a single-point-of-truth that can be accessed across the organisation – as well as by viticulturists, farm managers and externally contracted grower liaison officers – ensuring everyone is making decisions based off the same, up-to-date view of information. The insights gained from the new advanced location-based analytics capabilities have empowered staff at all levels to perform their jobs better – resulting in increased efficiencies across the organisation.

- **Greater return on investment.** The technology has automated task-based applications resulting in reduced operational costs and immediate benefits in productivity. Viticultural practices have been streamlined, reducing the complexity of the winemaking process and enabling vineyard managers to more accurately predict yields. The introduction of transportation tracking has significantly reduced delivery times, preventing the costly deterioration of the grapes. The crushing schedule has also been tightened with geo-fences and automatic alerts notifying the wineries when trucks are arriving, avoiding an expensive queue of trucks waiting to offload.

- **Strengthened TWE's global lead and market share.** The introduction of advanced location-based analytics technology has cemented TWE's status among the world's most progressive wine makers and ensured TWE can maintain the quality of its wines for decades to come.

Solution mix:

- ArcGIS Online
- ArcGIS for Server
- ArcGIS for Desktop
- Collector for ArcGIS App
- Esri Australia Industry Solutions Team

> "It was about making better decisions. We are producing better quality wines because we understand our supply chain better."

David Gerner, TWE GIS Specialist

TWE has reported that overall operational costs have been slashed while yields and fruit quality have increased.

Discover the value Esri Australia's GIS technology solutions will deliver to your organisation.
Call us on 1300 635 196 today.

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