GIS and Precision Viticulture

Dave Gerner – GIS Specialist
Introducing Treasury Wine Estates
Our Global Footprint

- **United States**
  - 10 Wineries
  - 49 Vineyards
  - 4,002 Planted Hectares

- **Italy**
  - 1 Winery
  - 2 Vineyards
  - 145 Planted Hectares

- **Australia**
  - 8 Wineries
  - 78 Vineyards
  - 8,939 Planted Hectares

- **New Zealand**
  - 2 Wineries
  - 8 Vineyards
  - 339 Planted Hectares
Key Challenges

A trend for quality over quantity

Vineyard Fruit                Wine

Vineyard variability drives quality

Precision viticulture exploits vineyard variability
Key Challenges

Natural & Extreme Events

- Frost
- Fire
- Climate Change
Key Challenges
Climate Change – Impact on the Supply Chain

Dr Christopher Rawson Penfold - Penfolds Magill Estate, 1844
Key Challenges

Climate Change – Impact on the Supply Chain

LESS Reliable Winter Rains

HIGHER mean temperatures

MORE extreme weather events

EARLIER HARVEST START

COMPRESSION
Climate Change – Our Observations

Key Challenges

1 Earlier
Vintage advancing by up to 2 days per year

2 Shorter
20 years ago – 21 days between harvest of late and early varieties
Today – 7 days

3 Faster
1998 – bulk of Shiraz in Barossa ripened over 30 days
Today – 15 days
Key Challenges

Single Point of Truth Data in Real Time

Geographically Disparate

Data & Knowledge Silos

Right Tech in the Right Hands

Train, Empower, Support

Systems & Tech Overload

How to KISS

TREASURY WINE ESTATES
Key Challenges

Single Point of Truth Data in Real Time

- Geographically Disparate
- Data & Knowledge Silos
- Systems & Tech Overload
- Right Tech in the Right Hands
- How to KISS
- Train, Empower, Support
Key Challenges
Supply Chain Optimisation

Sustainable Business Growth
Applying GIS throughout the supply chain
<table>
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<tr>
<th>Planting &amp; Growing</th>
<th>Harvesting</th>
<th>Wine Making</th>
<th>Packaging</th>
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<td>Block Preparation</td>
<td>Assessment</td>
<td>Crushing</td>
<td>Bottling</td>
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<td>Transport</td>
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<td>Stabilising &amp; Blending</td>
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<td>Bottling</td>
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<td><img src="image20" alt="Image" /></td>
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In the Vineyard

Analytics: Vigour Assessment
In the Vineyard

Analytics: Vigour Assessment
In the Vineyard

Decision Support Tool: Optimal Quality Outcomes

Plant Cell Density Maps

Split Picking Maps
In the Vineyard

Analytics: Understanding Variability
Disaster Management - Bushfires

6:00pm Friday 2nd
7:30pm Friday 2nd
8:00am Saturday 3rd
1:30pm Saturday 3rd
In the Vineyard

Disaster Management - Bushfires
Analytics: Frost Management

In the Vineyard
In the Vineyard

Analytics: Frost Management
In the Vineyard

Location Data Management
In the Vineyard

Field Mobility: Pest & Disease Assessment
In the Vineyard

Field Mobility: Mobile Data Capture and Information Management

- Block Mapping
- Vine Mapping
- Heat Mapping
- Irrigation Mapping
- Dashboarding
In the Winery

Decision Support: Logistics, Scheduling, Fruit Intake

Vineyard → GIS Server → Dashboards → Visualisation → Users

Logistics

Winery

TREASURY WINE ESTATES
In the Winery

Decision Support: Real-time harvesting
The Solution
A Platform for Viticulture

Desktop | Web | Device
---|---|---
GIS Data Management Resources | Regional Viticulturists | Technical Officers | Regional Managers

Web GIS

portal

Server

Online Content and Services

Imagery | Real-Time | Climate | Business | Regional | Field captured | Wine
The Solution

Outcomes and Benefits

- Real-time view of wine-making network
- A single point of truth for data
- Improved planning and response
- Informed decision-making
- Strengthened global market share
- Greater return on investment
- Improved HSE
Key Challenges

01 Growing & Sourcing Better Quality Grapes

02 Managing Climate Change & Natural Events

03 Single Point of Truth Data in Real Time

04 Supply Chain Optimisation
The Future

Sales and Marketing: A Move to Online
The Future

Sales and Marketing: Market Analysis
The Future

UAVs | Precision Viticulture | Robotics | Organisational Dashboards
Thank you