

# GIS, GPS and Smartphone Workshop

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## Agenda

Time	Topic	Presenter
9:00-9:20	Intro to GIS/Mapping and GPS	Kelly Bobbitt, Mike Bobbitt and Associates
9:20 - 9:50	Applications for GIS in Vineyards	Kelly Bobbitt, Mike Bobbitt and Associates
9:50 - 10:00	Break	
10:00 - 10:40	Uses of GPS Technologies in Farming	Russ Linhart, Trimble
10:40 - 11:00	GIS usage in SLO Ag Commissioner	Ryan Trapp, GIS Specialist, SLO County Ag Commissioner
11:00 - 12:00	Demonstration of data collection and map making using free and low cost tools	Kelly Bobbitt Russ Linhart Jillian Cole

- ## Mike Bobbitt & Associates
- ▶ 10 Year old vineyard mapping and database consultants with offices in Sonoma and in Atascadero
  - ▶ Specialize in GPS data capture, map production and GIS/Spatial database usage and training
  - ▶ Clients include
    - ▶ Wineries
    - ▶ Vineyards
    - ▶ Vineyard mgmt. companies
    - ▶ Wine marketing and distributors
    - ▶ Graphic Design companies
    - ▶ Regional Associations
- Well over 1000 vineyards mapped

- ## What do we do?
- ▶ Help develop new vineyards
  - ▶ Help redevelop existing vineyards
  - ▶ Create, manage and display vineyard information
  - ▶ Create marketing tools for Vineyards and Wineries

## Definitions

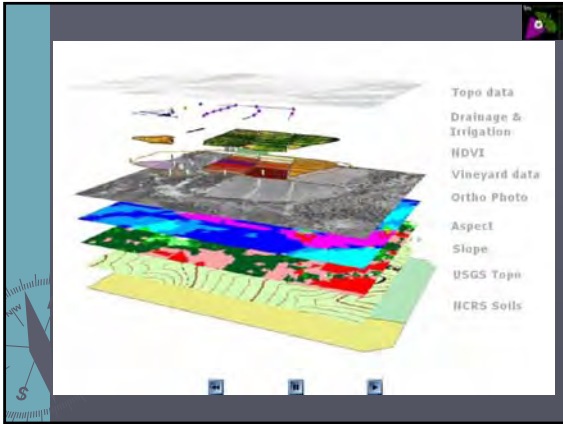
**G**eographic **I**nformation **S**ystem vs. **G**lobal **P**ositioning **S**ystem

## Geographic Information System

"An organized collection of computer hardware, software, geographic data, and personnel designed to efficiently

- Capture
- Store
- Update
- Manipulate
- Analyze
- Display

all forms of **geographically referenced information**"

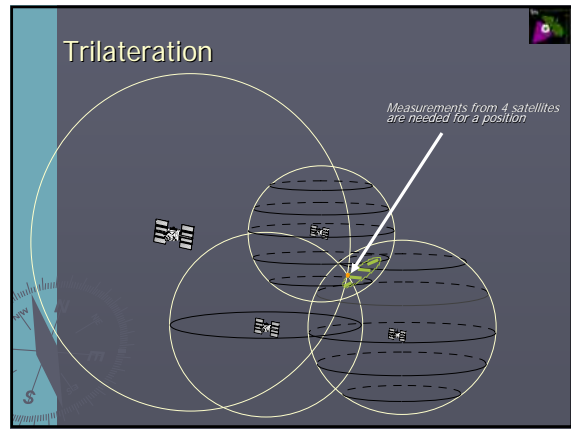


- ### Popular GIS Packages
- > ArcView
    - Full functioning GIS
    - Used by most GIS professionals
    - Not the most user friendly
  - > Manifold GIS
    - Inexpensive and very powerful GIS
    - No major releases since 2008
  - > Farmworks
    - Inexpensive GIS made for Agricultural users
  - > ArcExplorer
    - Free GIS viewer
  - > Google Earth
    - Some very basic GIS capabilities
  - > Various Open Source GISs
  - > Layer PDFs have many GIS capabilities

### Definitions

**G**lobal  
**P**ositioning  
**S**ystem

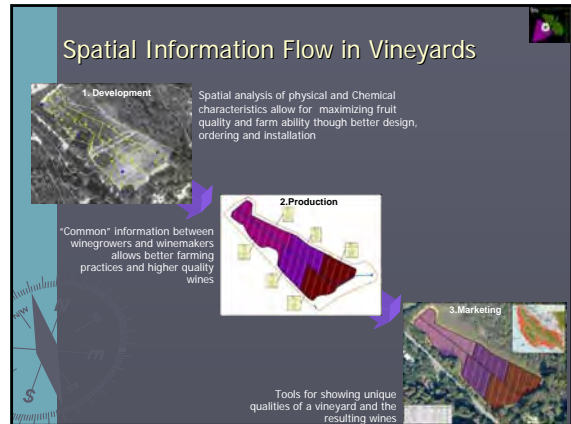
GPS is an efficient and convenient tool for accurately measuring locations on the globe.



### GPS Horizontal Accuracies

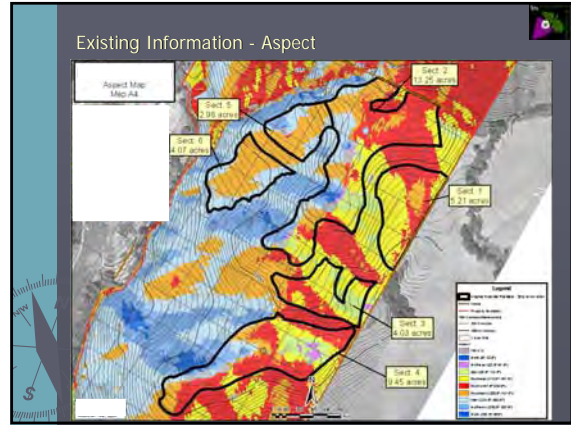
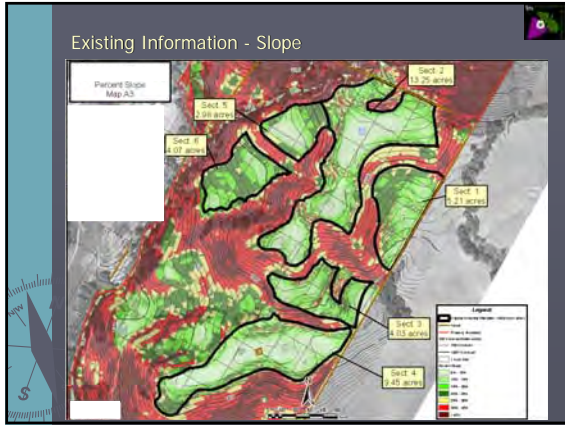
GPS Receiver Type	Autonomous	Differential GPS	Carrier Processing
Low End Mapping	40ft	6ft	
High End Mapping	40ft	< 3ft	< 1ft
Survey receivers	40 ft	< 3ft	< 1/2 in

Back









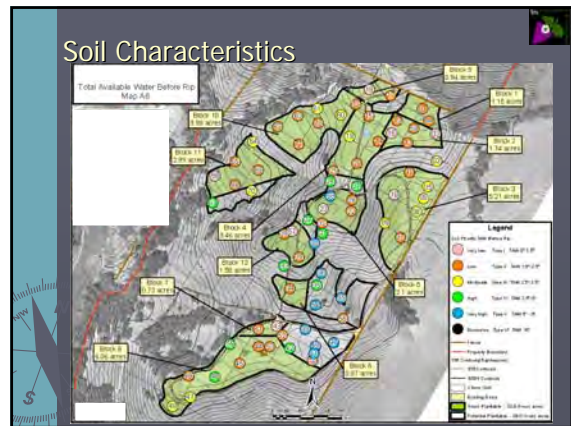
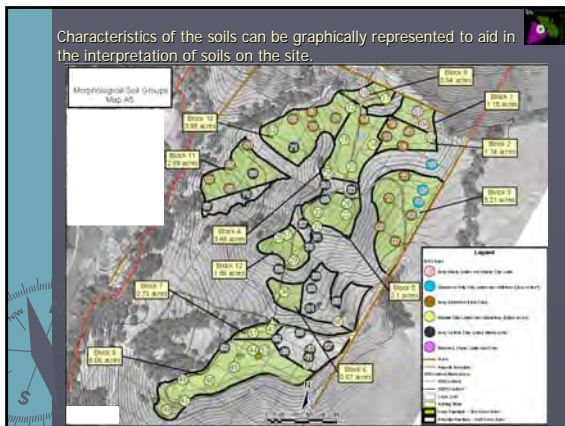
Step 2 - GPS is used to map soil pit sampling locations and other features that will determine plantable area

GPS

### Characteristics of the soils can be classified

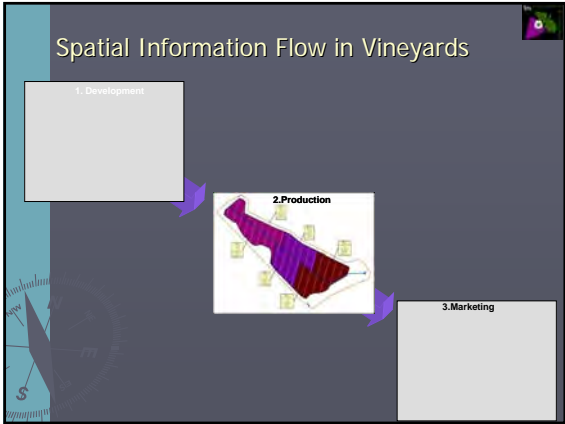
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But this does not do us much good...









## 2. Production

Two phases to building and using a Vineyard Information System

- A. Vineyard Mapping and Inventorying
  - Initial compilation of existing physical data and the spatial component to this data
- B. Vineyard Management
  - Using the GIS for better decision making and communicating across the organization
  - Ongoing updating information building history of vineyard in a centralized information depository

## 2a Vineyard Mapping and Inventory

The objective is to compile existing viticulture data and capture new data at appropriate levels:

- Block Level
- Vine Row Level
- Plant Level

## Block Level

- ▶ Block Boundaries
- ▶ Varietal, rootstock, clone info
- ▶ Planting date
- ▶ Acreage
- ▶ Other info

## Vine Row Level

- ▶ Vine Rows
- ▶ Varietal rootstock, clone info
- ▶ Planting date
- ▶ Acreage
- ▶ Plant count
- ▶ Surface irrigation features
- ▶ Other info

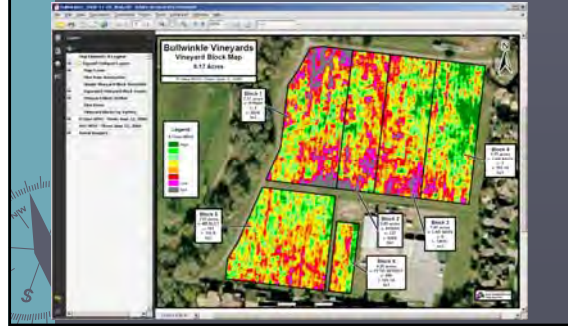
## How is data delivered to clients

- ▶ Traditionally
  - Electronic or hard copy maps
- ▶ Currently
  - "Layered" pdf's

Such as Multilayered PDF Maps



With NDVI Layers:



And other convenient uses;



How is data starting to be delivered within organizations

- ▶ Web based interactive maps
  - Data can be updated through multiple avenues
    - ▶ PDA or smart phone with GPS or without
    - ▶ Through web browser on PC

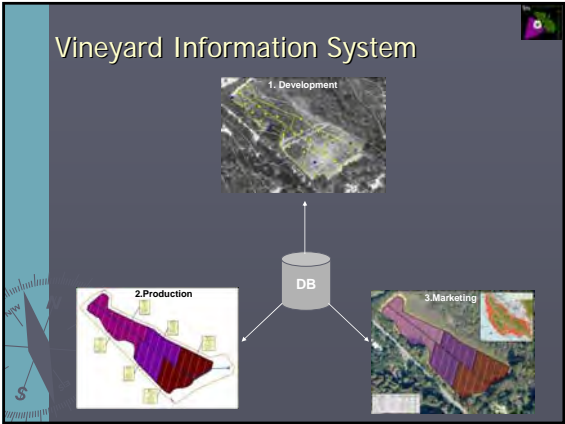


## 2b Vineyard Management

The GIS database is used to store and analyze historical information on:

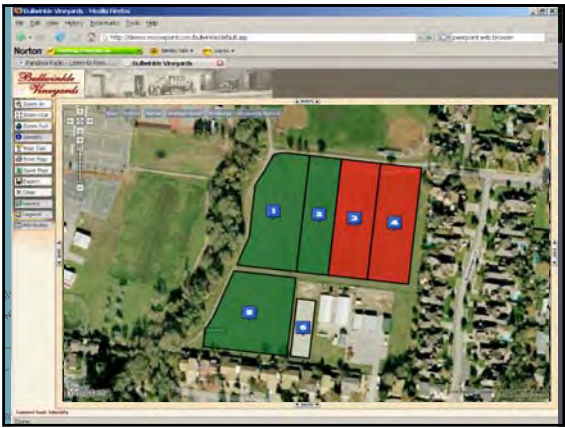
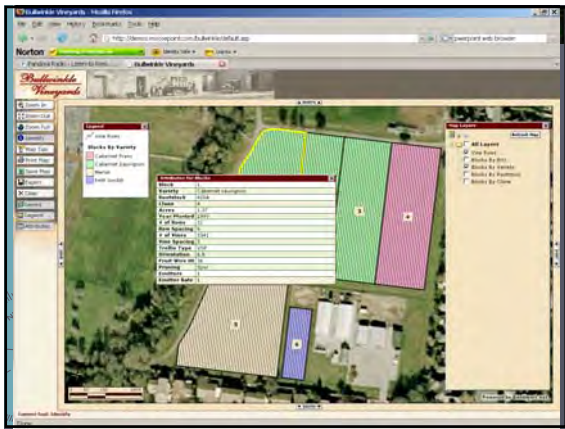
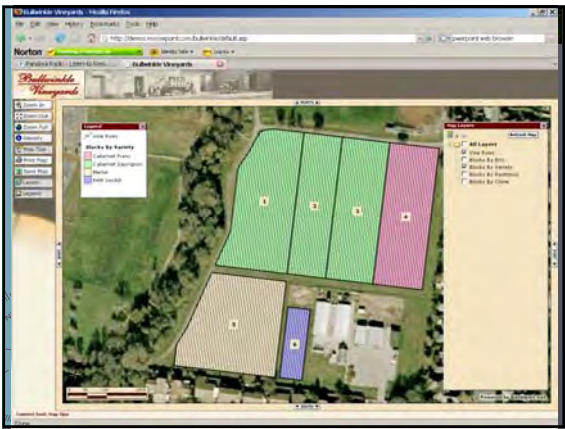
- |                              |                      |
|------------------------------|----------------------|
| • Data vines                 | • Labor costs        |
| • Pruning weights            | • Chemicals applied  |
| • Pressure bomb readings     | • Sugar levels       |
| • Irrigation schedules       | • Bud break          |
| • Cluster counts             | • Veraison           |
| • Yields                     | • NDVI               |
| • Petiole data               | • Wine tasting notes |
| • Pest and disease locations |                      |

Storing this information in a single location on a corporate network makes the vineyard accessible to everyone in the organization

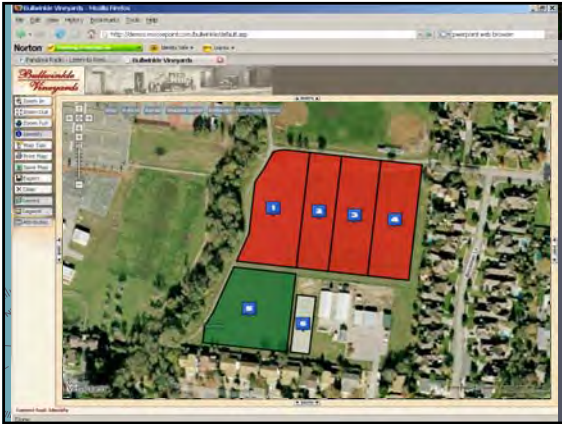


# What is happening today?

- ▶ Technology (smartphones) is moving GPS into the background and data into the foreground
- ▶ A move towards simple data collection/synchronization and usage
- ▶ Real-time monitoring and analysis (important for harvest)

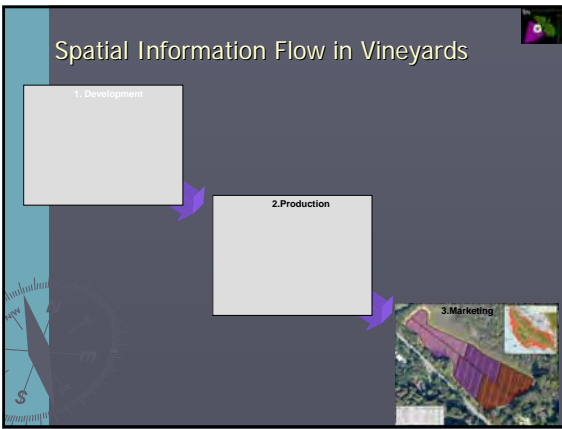






### Live example

- ▶ [Sugar Map link](#)



### 3. Marketing

- ▶ Demonstrate to customers where the components of a particular wine were grown
- ▶ Educate wine writers about the factors that influence the quality of your grapes and wines

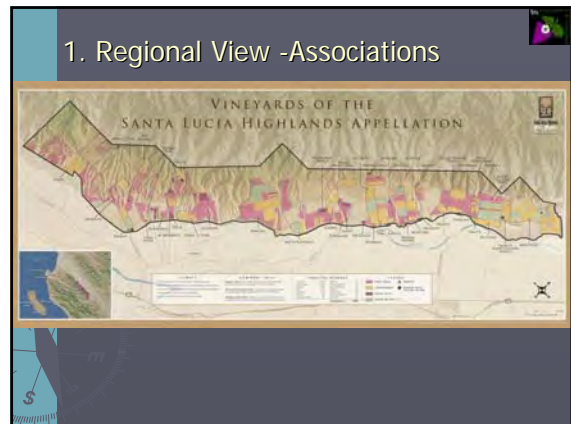
### Marketing Map

Main components

- Vineyard
- Soil
- Topography
- Climate

3 Views that are important to show a sense of place

- Regional View
- Vineyard View
- 3d View



## Regional View – Individual Brand



## Regional – Web Based



## Vineyard View Varieties



## 3d Simulations for Print



## EVAN'S RANCH



## 3d Animations

- ▶ Traditionally Wineries had to bring the market to the vineyard
- ▶ Now bring the vineyard to the market
- ▶ Can be used for
  - Kiosk
    - ▶ Tastings or tasting rooms
  - Web
  - Presentations
    - ▶ Educational tool

