



Saturnalia

Know your Wine



Gianni Lisini
Ticinum Aerospace

Wine Market

Total market
value in 2015
28.3 B€

4.5 B€ exported
from Italy alone, set
to grow

fine wine has
been recognised as a
**genuine
alternative
asset class**

Alibaba
launched a wine
platform in
2016

Fine wine sales
in the U.S. up
25% since
2004

Popularity of fine wine
increased
234%
in a decade

“

*Knowledge about
wine quality
translates into
monetary value*



Saturnalia

*automatically **collect**, **aggregate** and
make wine **quality** indicators accessible
when and **where** it matters.*

Spin-off company of University of Pavia, Italy

- Extensive expertise in
- EO image analysis
- Data fusion
- Machine learning
- Hardware development
- Geospatial software



Our Team



**Daniele
De Vecchi**

*Remote Sensing
Specialist*

Launcher of the
Saturnalia concept



**Daniel
Aurelio
Galeazzo**

*Front-end/
Back-end
Developer*

Platform designer
and DB expert



**Gianni
Cristian
Iannelli**

*Machine Learning
Specialist*

Deep learning on
wine quality
proxies



**Fabio
Dell'Acqua**

*Professor of Earth
Observation*

Advice on EO data
exploitation



**Gianni
Lisini**

*Hardware
specialist*

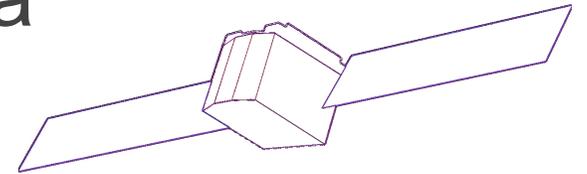
Ground-based
sensing

How can we do that?

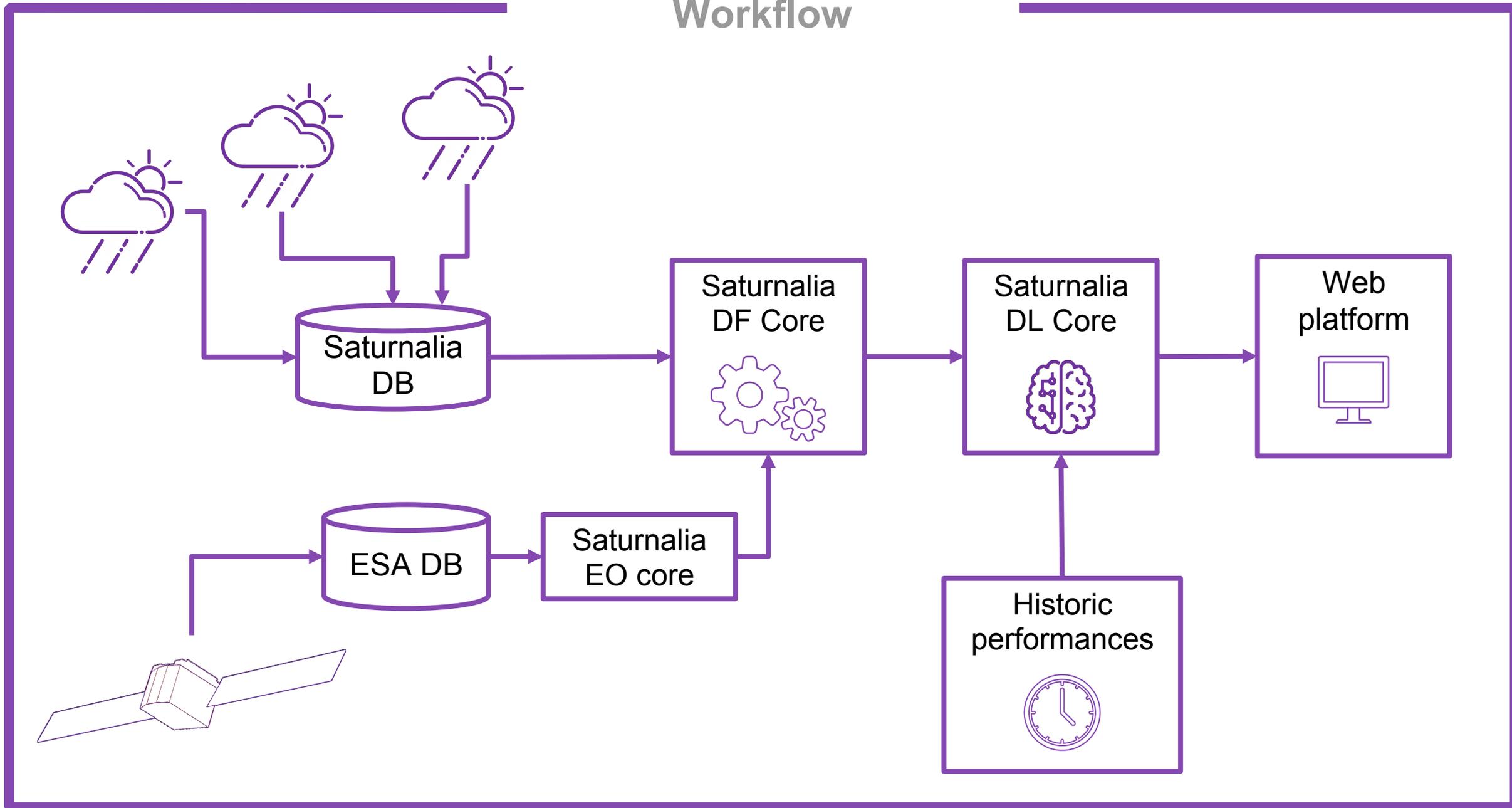
- Climate factors affect at **least 80%** of the vintage performance
- **Constant monitoring** gives excellent clues on what will come out of the canteen
- Provide values of each specific wine according to its **previous performances**
- **Most other factors** are incorporated into the average performance

Combination of satellite and weather data

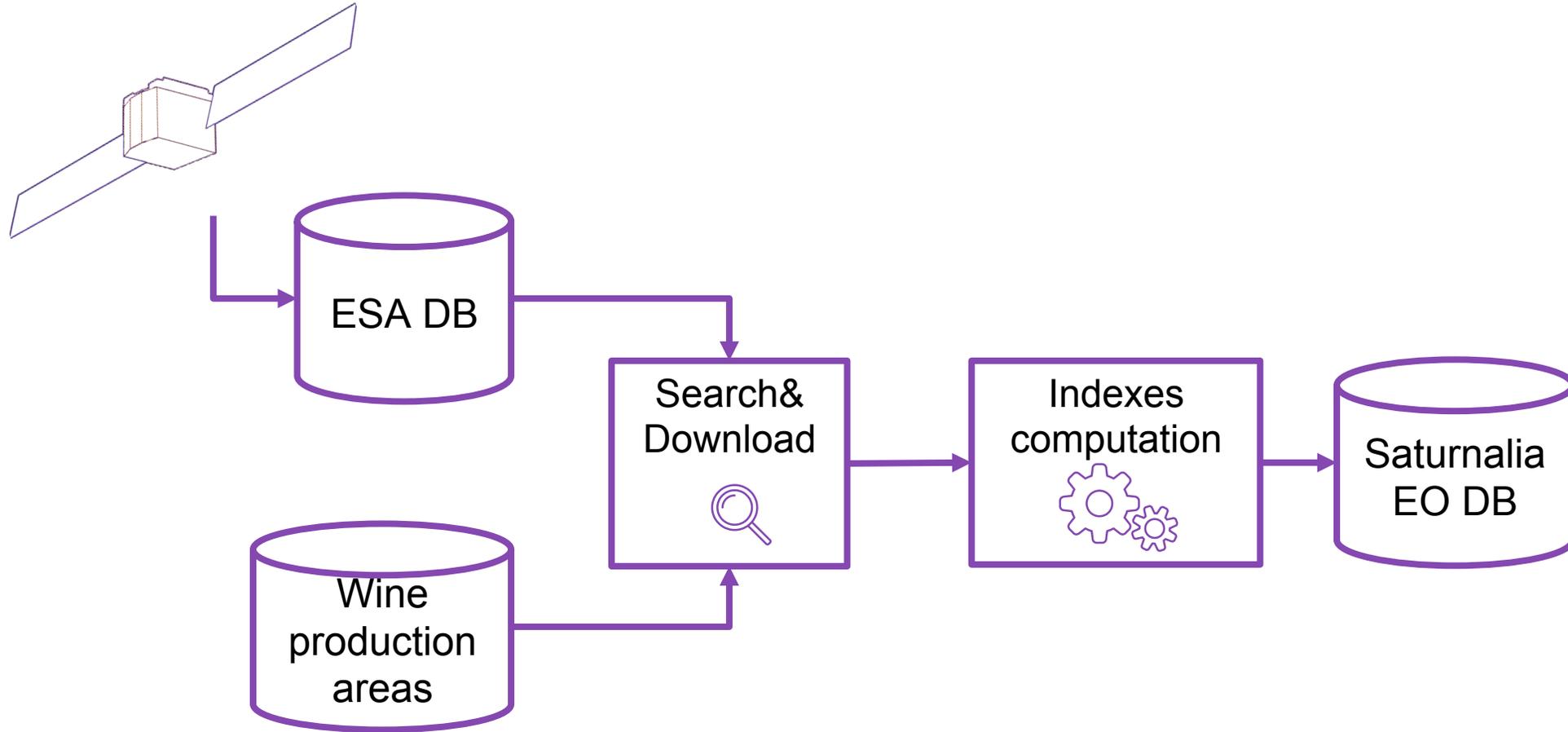
- **Copernicus** programme (e.g. S2A and S2B) and **VHR multispectral data**
- Tailored, **patent-based weather stations**
- **Machine and deep learning**



Workflow



EO core



Weather data

- Need for flexibility and expandibility
- **Lack of local storage for recorded parameters in case of connection failure**
- Integration of data transmission techniques:
GPRS and LoRa

WS prototype



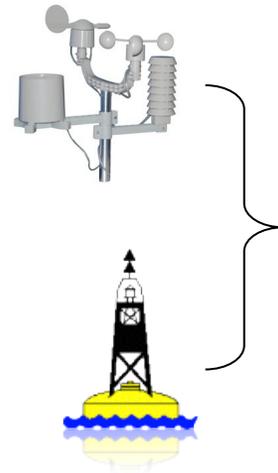
Benefits

- Optical rain sensor
- Hail sensor
- Ultrasonic Anemometer (testing)
- No or less maintenance
- Long lifespan patented battery
- Automatic sensors values storage

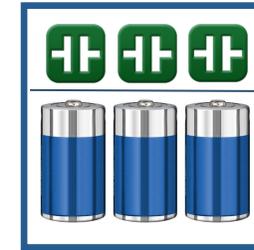
Multy-cycle Rechargeable Longlife Battery System (Pat. US20170201120A1)

Benefits

- Excellent operating life in calendar, cycling and floating conditions
- Unrivalled operating temperature range from -40°C to +80°C
- High level of safety, compatible potentially explosive atmospheres
- Smaller environmental footprint than other technologies
- Customizable battery shape than other technologies



5 to 12 Vcc



HYBRID ACCUMULATOR SYSTEM

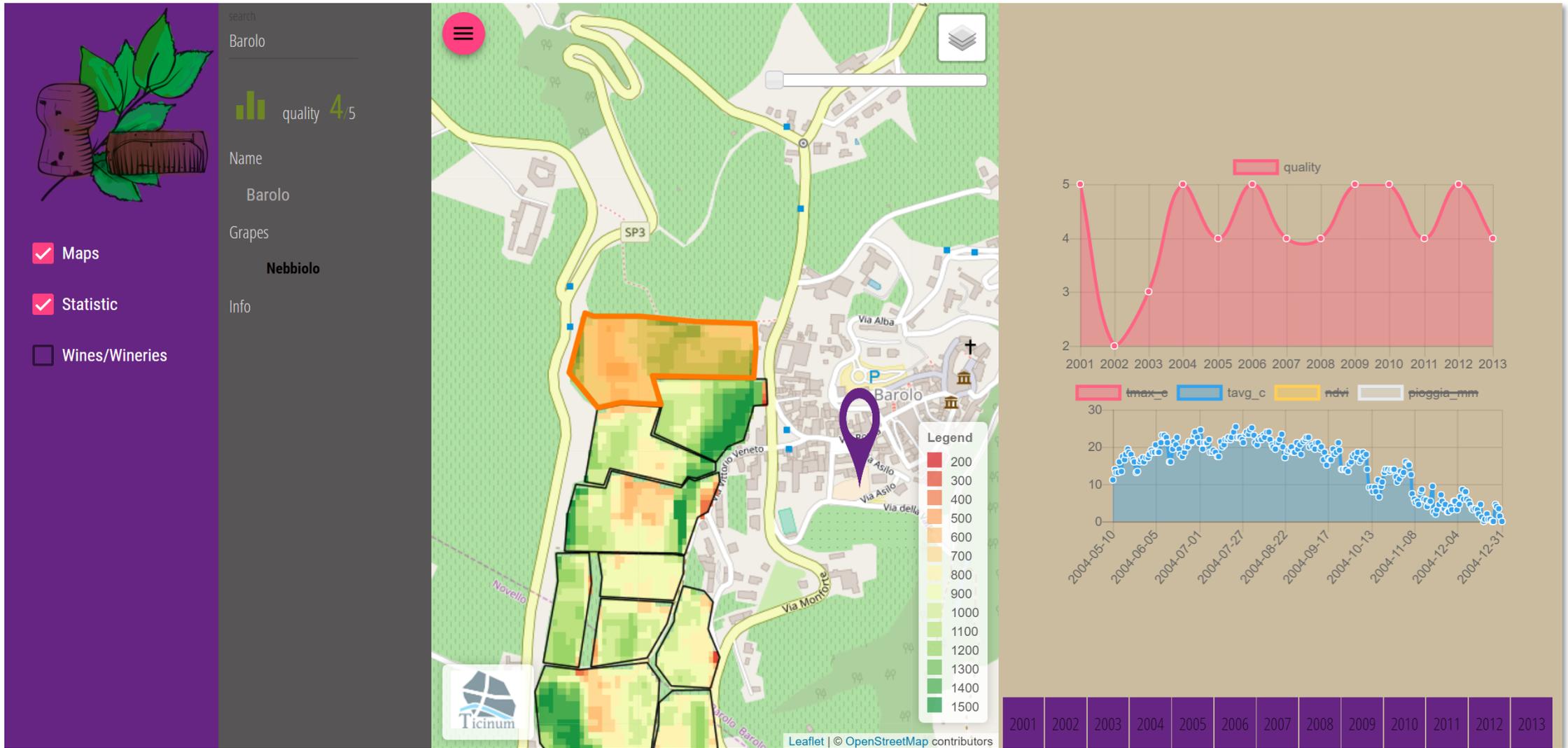


Patented hybrid technology

- Supercapacitor quota for daily energy consumption
- Longlife high energy VRLA battery for backup use
- Maintenance free
- No memory effects

OVER 20 YEARS with NO MAINTENACE

Platform





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Financial contribution to this work by the European Space Agency (ESA) through Contract No. 4000122245/17/NL/NR awarded in response to our “Saturnalia” proposal submitted to the AO/1-8872/17/NLCLOP “Food Security” call



Saturnalia

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Thank You!

Wine rating

What do we mean by wine quality?

- 100-point rating system created by Robert Parker
- A de facto standard scale, used by critics to rate each wine
- Each score is obviously attributed after tasting the final product

