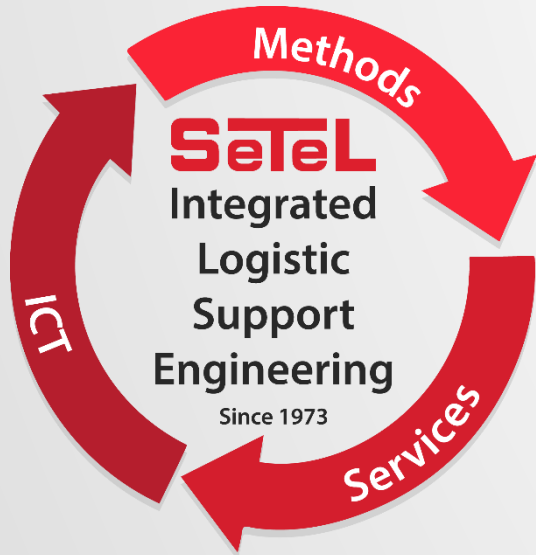


COMPANY AND MAR PRESENTATION

SeTeL

SE.TE.L. – SERVIZI TECNICI LOGISTICI CORE BUSINESS



SeTeL is a limited private company located in Rome operating, since 1973, in the Integrated Logistic Support Engineering field.

Its main mission is to provide services, consulting, applications, and technologies that guarantee the highest level of operational availability (life cycle) of complex systems.

For a system to be efficient it is necessary:

- that it works (achieving the required performance)
- that it remains available over time (System Availability)
- that it respects the expected cost

To achieve these results, many disciplines are integrated to "logistically" support the system.

ALWAYS MAINTAINING A CONSTANT COMMITMENT TO RESEARCH AND DEVELOPMENT

SE.TE.L. – CORE BUSINESS – ILS

To ensure and maintain...

- ...the desired capability over time.

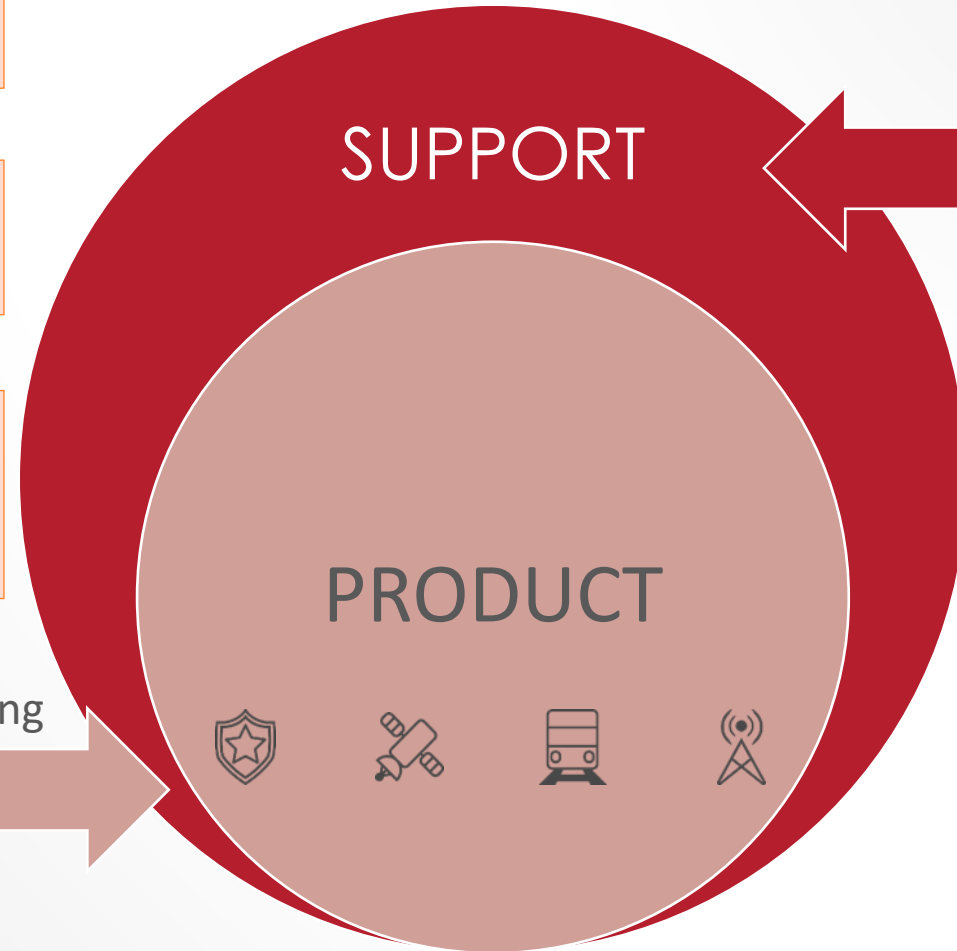
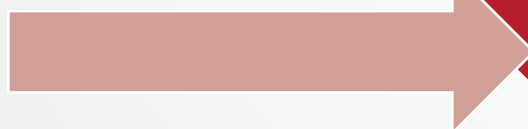
By providing...

- ...analyses, methods, models and tools.

In order to...

- ...understand, foresee, monitor, optimize and improve...

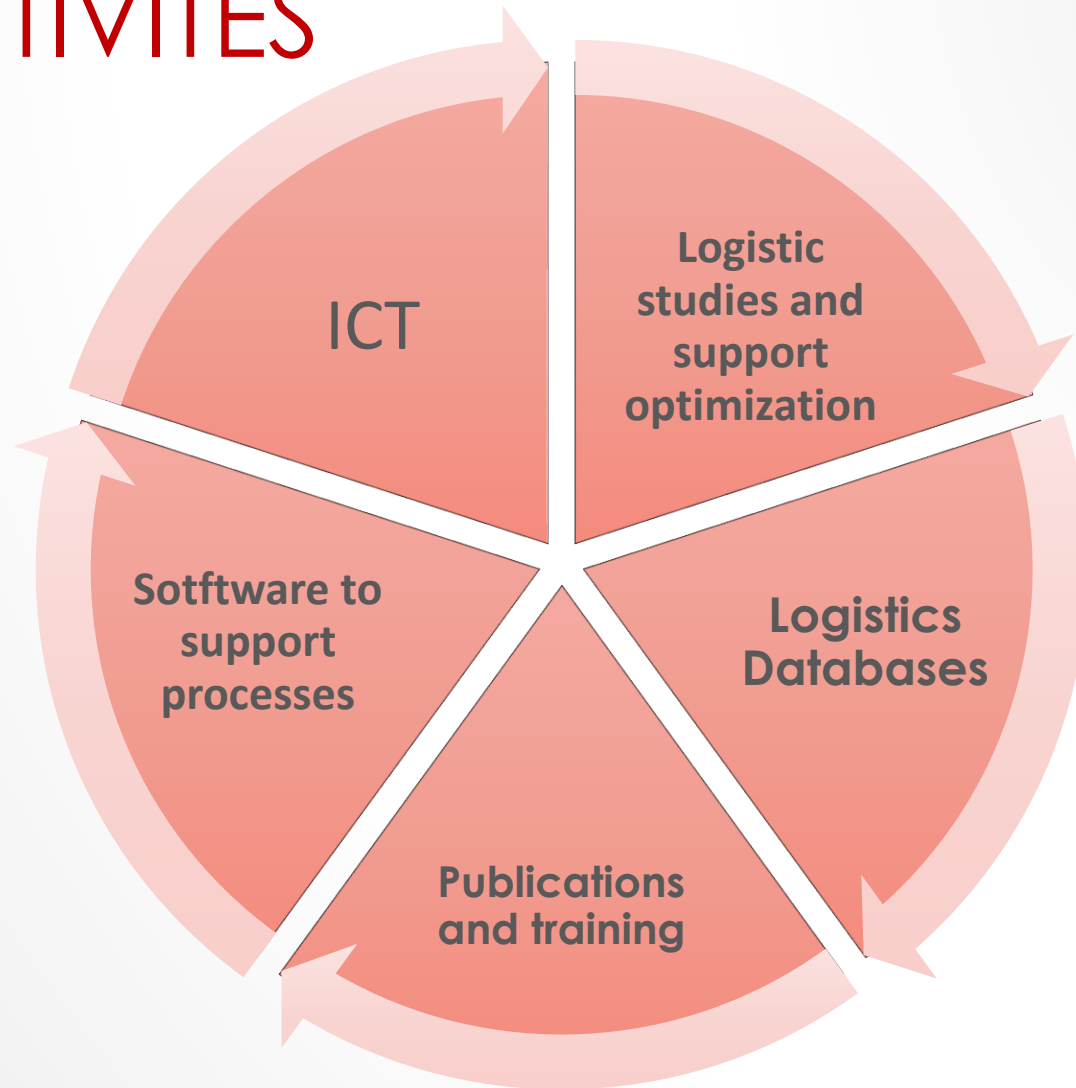
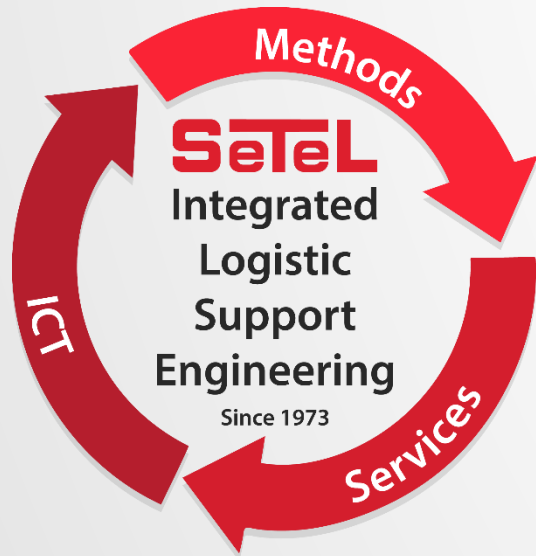
Product Engineering



IPS Engineering

...LIFE CYCLE COST AND SYSTEM EFFECTIVENESS
THROUGHOUT THE LIFE CYCLE.

SE.TE.L. – OUR ACTIVITES



ALWAYS MAINTINING A CONSTANT COMMITMENT TO
RESEARCH AND DEVELOPMENT

MAIN CUSTOMERS



SOME DATA...

- ✓ Established in 1973 to operate in the logistic support field
- ✓ Limited, private partnership logistic engineering consultancy
- ✓ Capital of 1,500,000 Euros including retained profits carried forward to reserves
- ✓ Located in Rome, premises are part of the Company properties (750 sq.mt.)
- ✓ Staff of manpower qualified to University degree or equivalent
- ✓ Turnover (2022): 2,000,000.00 Euros
- ✓ Employes (2022): 35

RESEARCH AND DEVELOPMENT

SeTeL has always paid great attention to R&D activities which initially were developed in technical documentation sector and subsequently gradually moved towards the various areas of Complex Systems Engineering, up to the design of the MAR Multipurpose Amphibious Rover, an enabling platform on which to install ad-hoc sensors and enabling instrumentation.

Today MAR – Multifunction Amphibious Rover has become our main project.



COOPERATIONS AND CLUSTERS

Since 1973 SeTeL has always developed by constantly interacting with Industry and Research organizations.

Hence SeTeL's ability to integrate non-homogeneous skills and competences and to:

- promote and optimize the multidisciplinary relationship and communication capacity between complex organizations (large, medium, small and OdR) in the development of projects with a high technological content;
- ensure effective governance of the activities/problems connected to the integration of national and international subjects (companies, universities, research, etc.) with very different languages, techniques and entrepreneurial cultures;
- directing and managing processes aimed at creating clusters and networks of clusters, between entrepreneurial and research subjects, operating on innovative supply chains.



MAIN R&D PARTNERS



SAPIENZA
UNIVERSITÀ DI ROMA



TOR VERGATA
UNIVERSITÀ DEGLI STUDI DI ROMA



UNIVERSITÀ
degli STUDI
di CATANIA



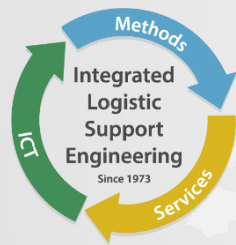
UNIVERSITÀ
degli STUDI DELLA
Tuscia



Consiglio Nazionale
delle Ricerche



REGIONE
LAZIO



MAR
(TERRESTRIAL ROVER VERSION)

SeTeL



- **MAR concept and features**
- Capabilities and advantages
- Opportunities

THE MAR CONCEPT

The MAR system (Multipurpose Amphibious Rover), is composed by a platform, the Rover and a Ground Station



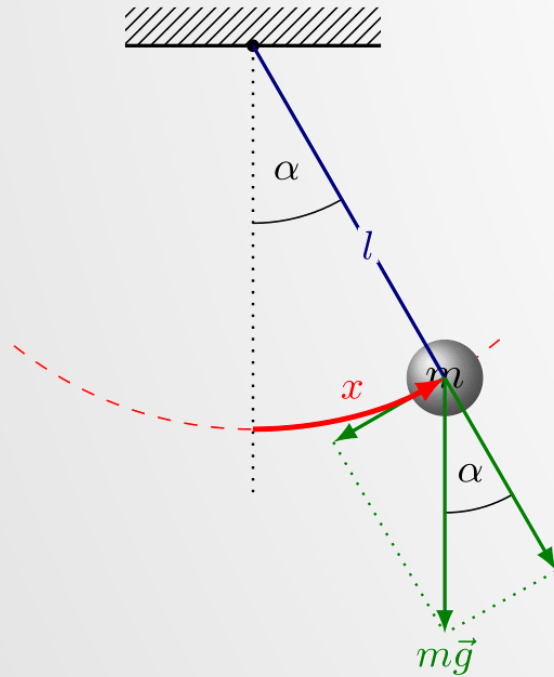
MAR



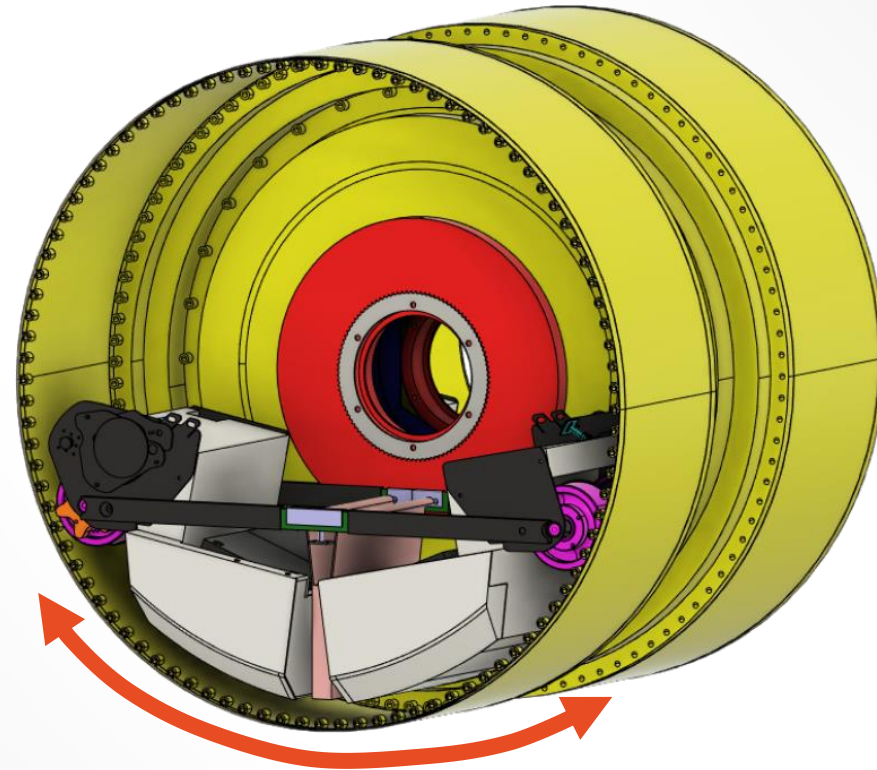
Ground Station

OPERATING PRINCIPLE

This vehicle exploits the physical principle of the pendulum.



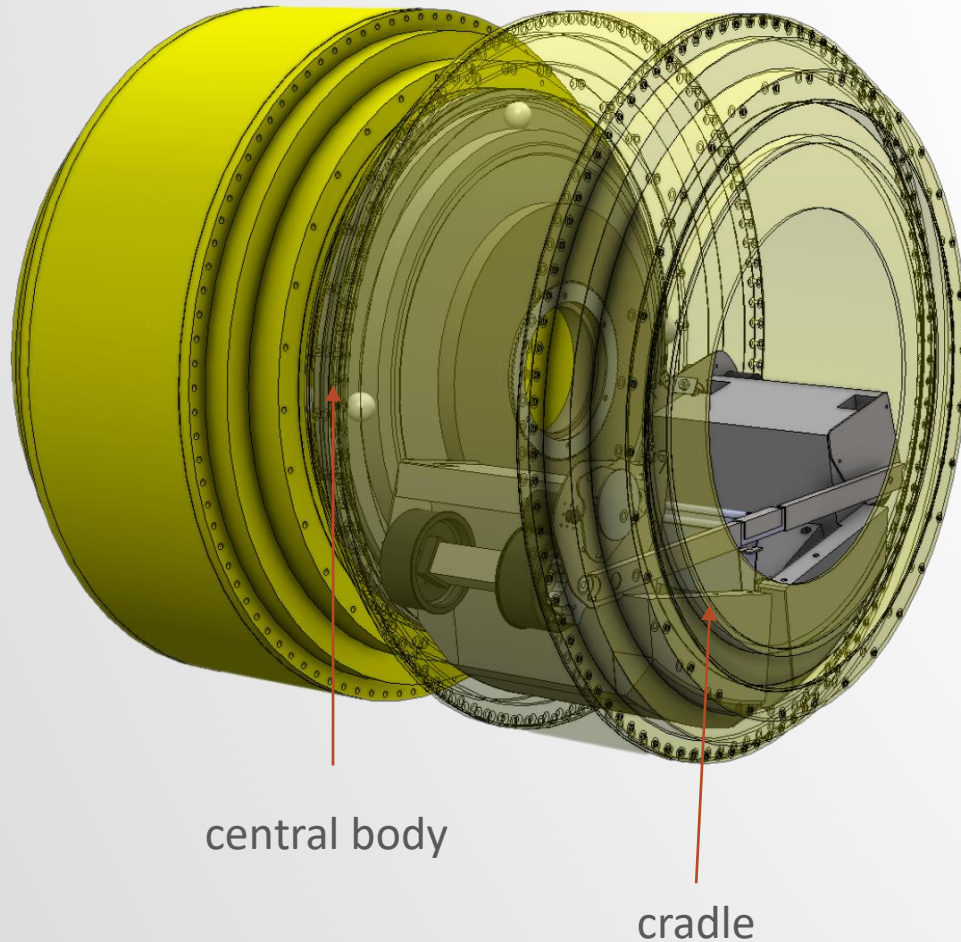
The cradle inside the wheel performs exactly this movement



Cradle inside the wheel

PATENTED EU/USA/CINA

PAYLOADS



MAR can carry payloads in two areas:

- The cradle (payload weight contributes to propulsion)
- The central body to house the visual sensor (multispectral, IR) and the active arms.

All metal parts can be placed below the float level, reducing the radar cross section.

Low energy consumption; consequent reduction of IR emissions.

SENSORS

MAR is the ideal platform for various types of sensors.



Standard sensors:

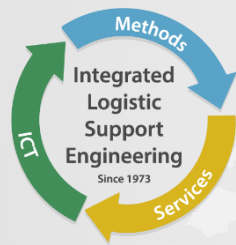
- Multispectral cameras
- Thermal camera
- Hyperspectral sensor

Other sensors:

- Far and near infrared
- Bioluminescence
- Georadar
- Multilevel resistive sensors
- Temperature, humidity pressure
- Brix hydrometer

Positioning devices:

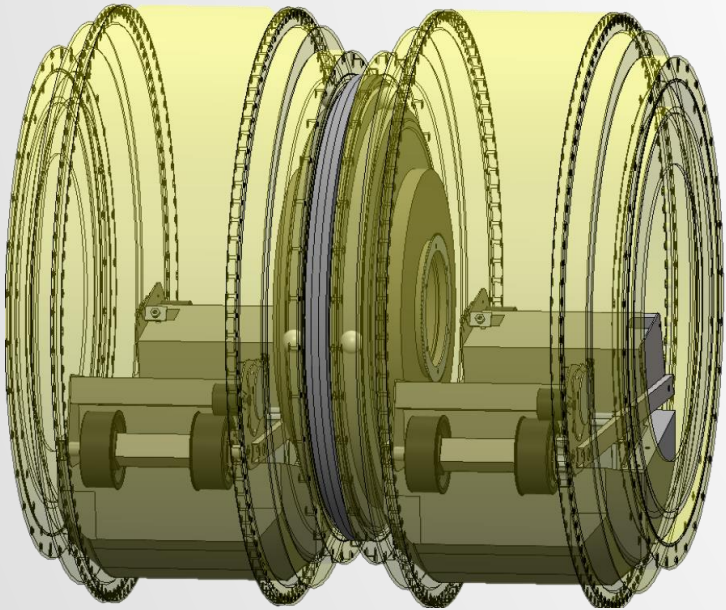
- GPS RTK
- Lidar
- IMU's



- MAR concept and features
- **Capabilities and advantages**
- Opportunities

FEATURES AND PERFORMANCES

Unmanned and amphibious, it can operate on sand, mud and liquid surfaces without changing shape or configuration.



High mobility maneuvers in complex environments (rivers, lagoons, ports or mixed ambients). Intrinsically stable.

Ready to be customized in different sizes (decimeters to meters).

It is a natural radome: it houses and protects chemical sensors, electronic devices, processing capabilities, antennas etc.

Electric driven, low pollution, low energy consumption.

It can perform accurate geolocalized operations, such as monitoring or actions such as spraying, sample collection, electromagnetic actions and potentially perform real-time analysis on site.

Battery + motor = Low Central Gravity

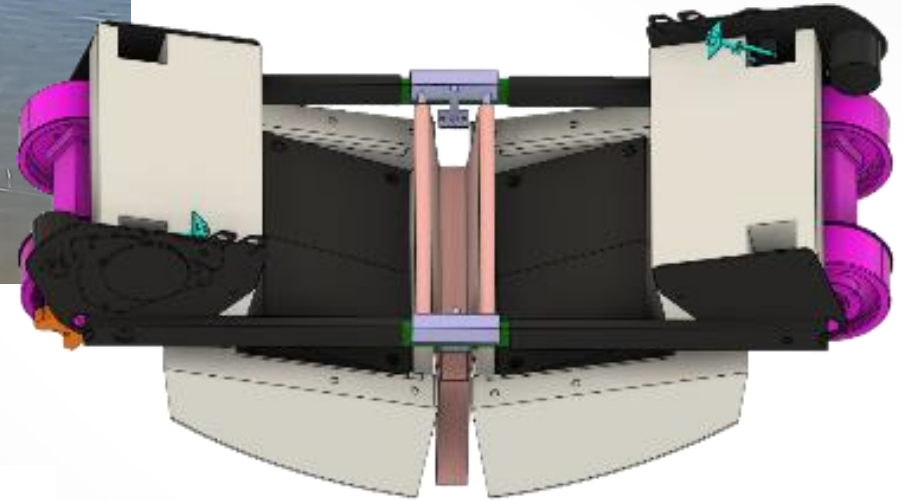
MULTIPURPOSE



TIRE ASSY



PADDLE ASSY

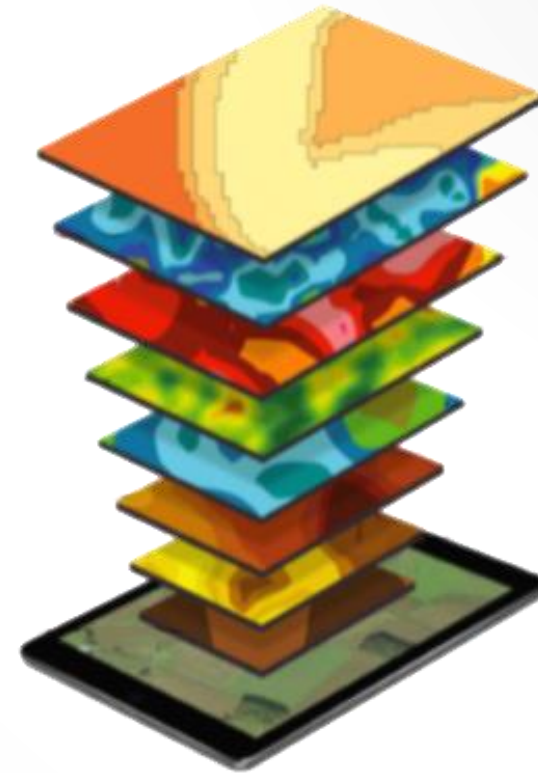


BATTERY PACK

Tire Assy, Paddle Assy and Battery Pack can be selected according to mission

DATA FUSION

- Data Bases
- Thematic maps
- Algorithms for the analysis of vegetative indexes
- AI
- Communications (5G)
- Block Chain
- Big Data
- etc...



Source: Omnia Precision Agronomy, 2018

CURRENT APPLICATION IN PRECISION AGRICULTURE



winegrover.eu



For the full video

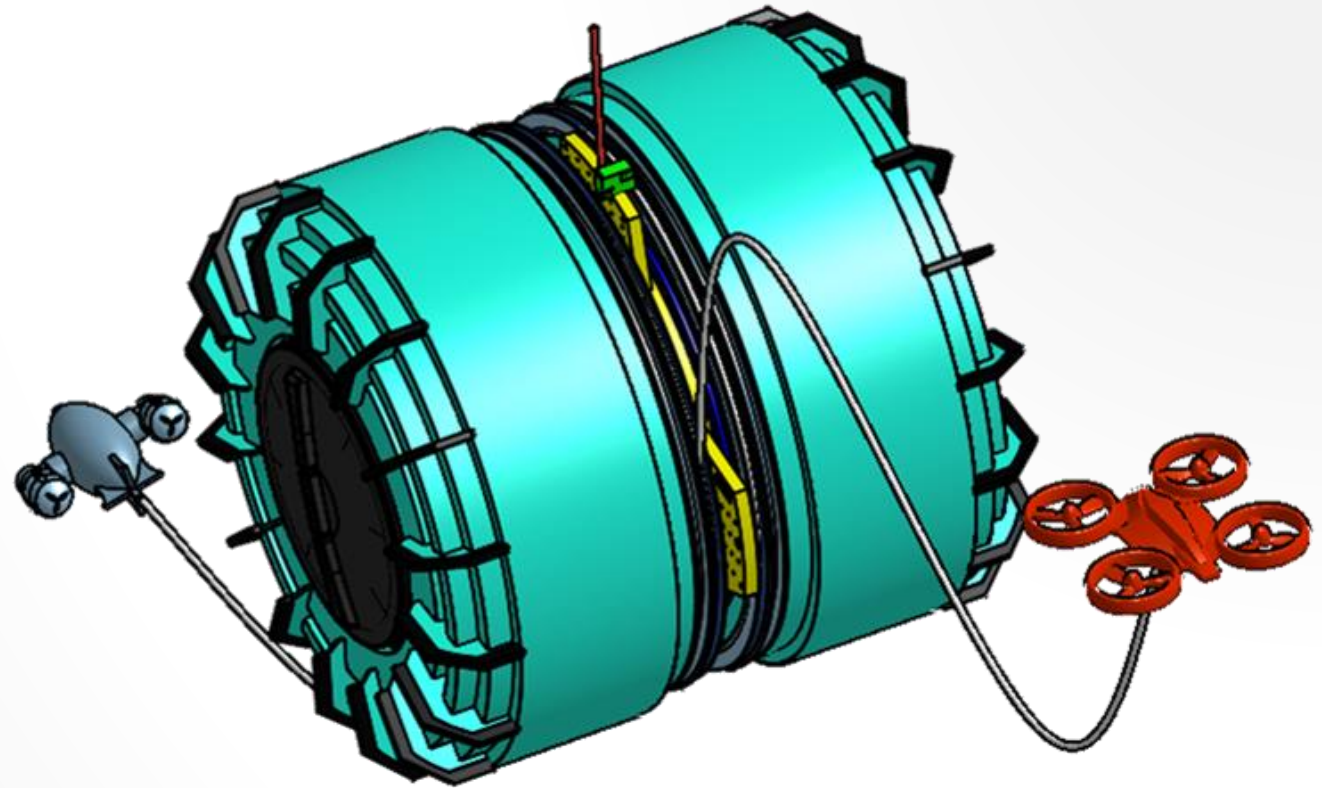
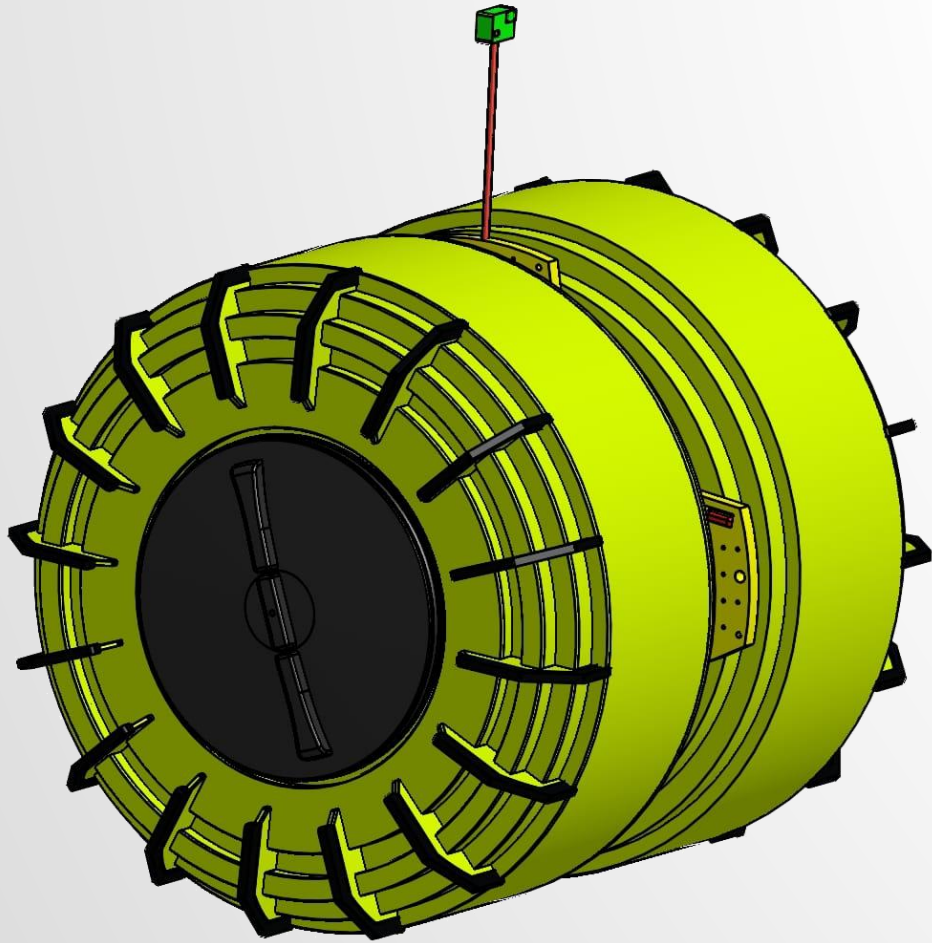


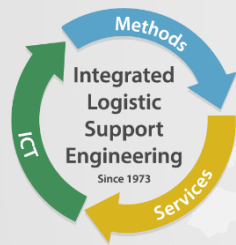
ADVANTAGES TERRESTRIAL ROVER IN AGRICULTURE



- Unlike aerial drones it can manage **diagnosis and therapy**, being able to transport hundreds of liters of chemicals, selected and mixed according to the results of the analysis in real time
- **Economically convenient** in relation to capabilities
- **Gentle with the soil**, it allows to reduce the number of reworks without giving up a constant monitoring of the vegetative state
- **Totally electric** and therefore with 0 emissions
- Able to track (**geolocation** and time period) all parameters of the installed sensors. Timely tracking of treatments at the individual plant level.

THE EVOLUTION OF MAR





- MAR concept and features
- Capabilities and advantages
- **Opportunities**



MAR allows the monitoring of the vineyard in its complex vegetative cycle and acts in the irrigation and application phases of pesticides and nutrients by optimizing the distribution of pesticides, fertilizers and water. It only works where it is necessary, thus increasing the sustainability of the environment.



Hilly Winegrowing

MAR can operate safely, where farm tractors overturn, on hilly slopes with steep slopes and with transversal rows





Rice culture

the Rover guarantees actions aimed at improving production, seed activity, production assistance and analysis service to the supply chain. The Rover moves easily both on marshy ground and in shallow waters without damaging the crop



Row crops

soil analysis, precision fertilization
and culture monitoring and
targeted treatments





DESERT AREAS

- ✓ The rover can easily move on desertic terrain
- ✓ It can transport materials without overturning
- ✓ It is equipped with a series of infrared, NIR and RGB sensors and for high-end applications it can be equipped with multi-spectral
- ✓ It will be used for surveillance and security activities
- ✓ Antennas can be located inside the wheels that can be designed to be transparent to RF





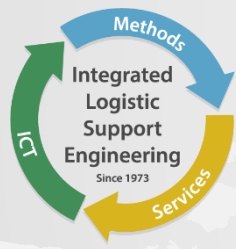
Rescue in case of natural disasters

- ✓ Ease of mobility on snowy terrain
- ✓ Timely inspection for ease of movement on snowy terrain
- ✓ Possibility of transporting food and first aid medicines
- ✓ Support for telemedicine intervention



MORE ABOUT OPPORTUNITIES





THANKS FOR THE ATTENTION

www.eco-mar.it

www.setelgroup.com

SeTeL