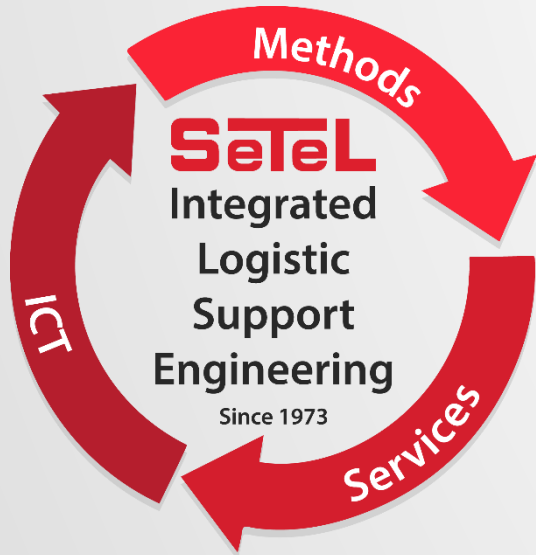


COMPANY AND MAR PRESENTATION

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.

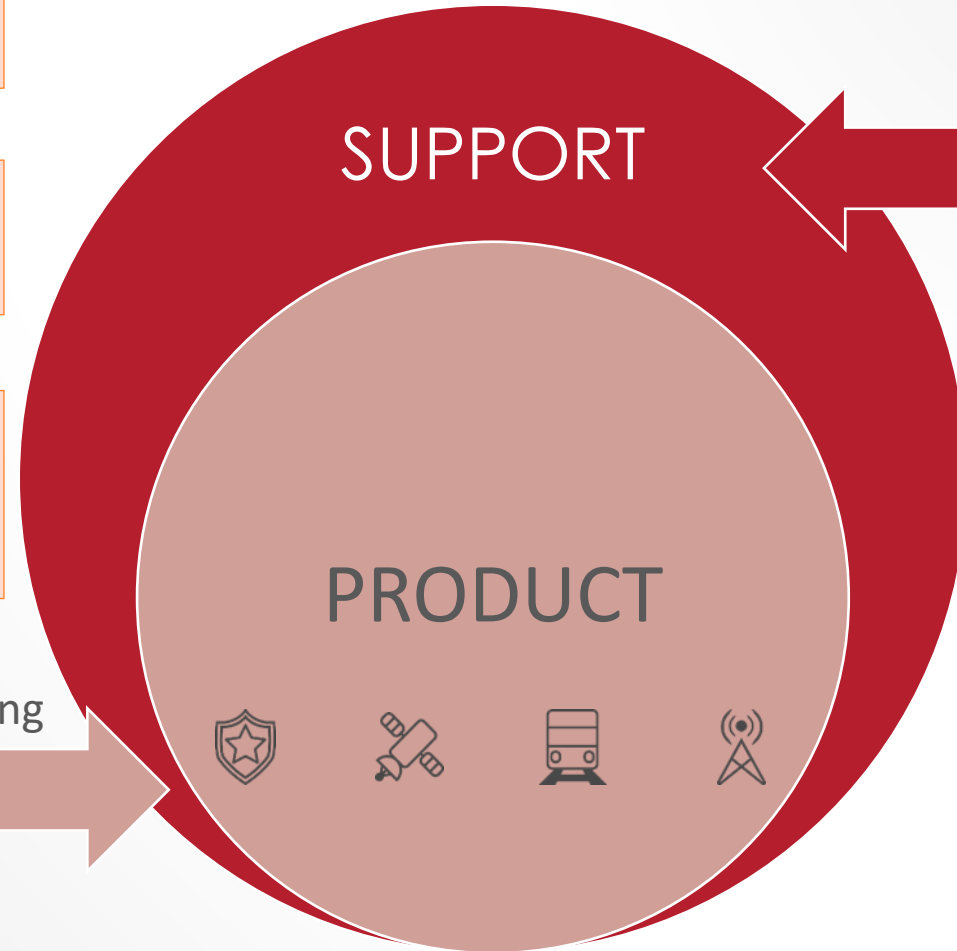
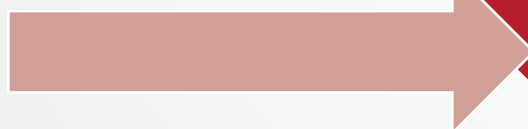
By providing...

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

In order to...

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

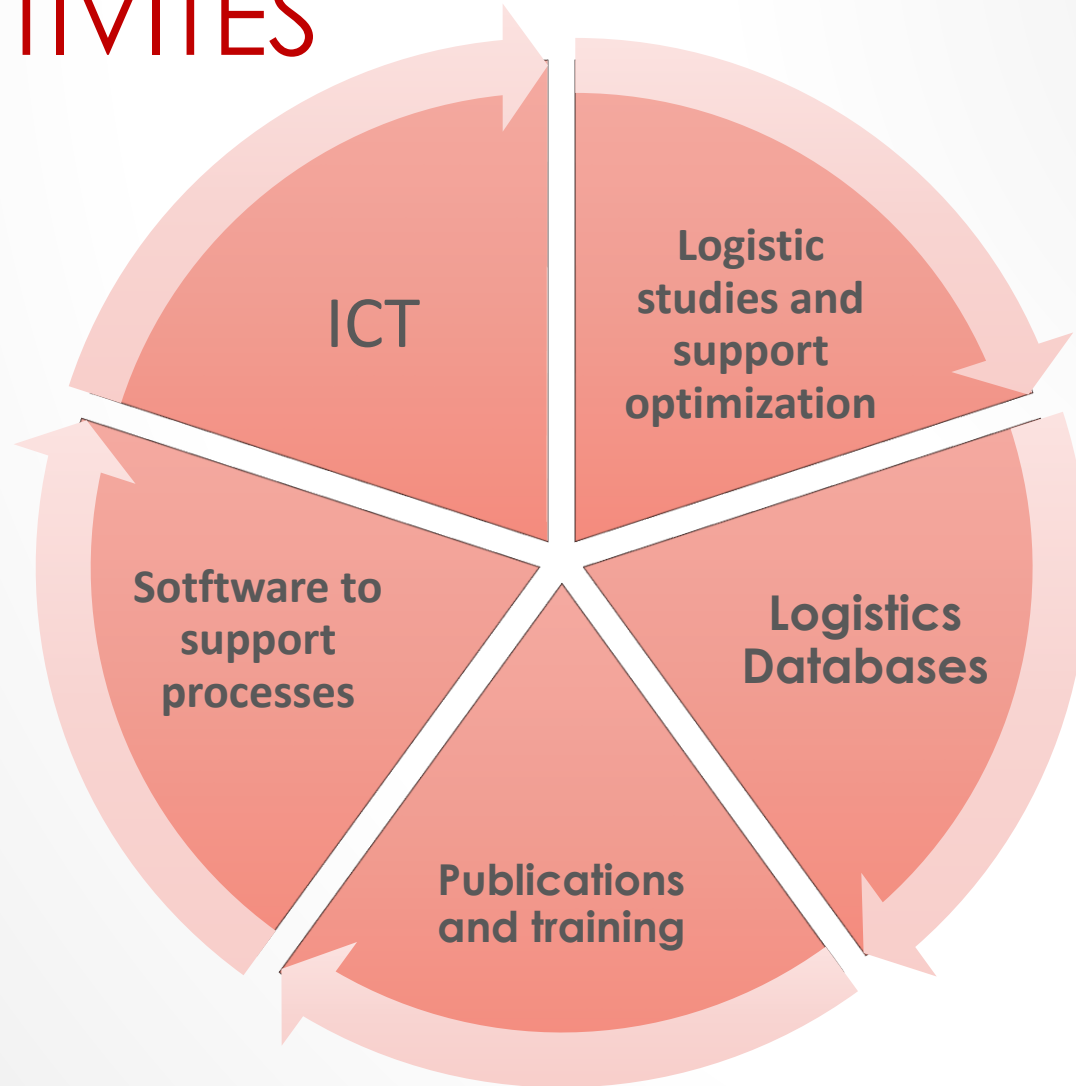
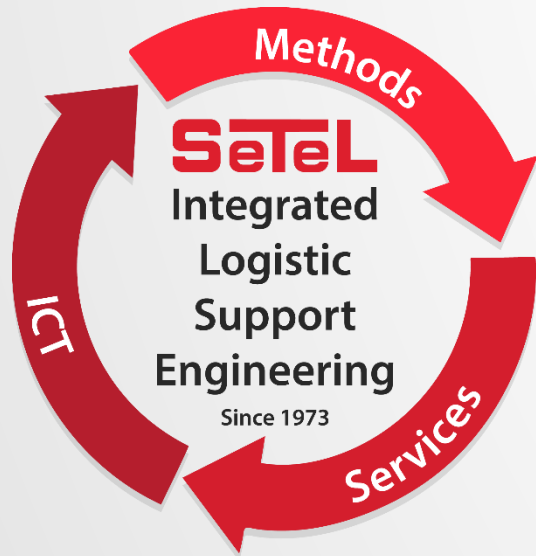
Product Engineering



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

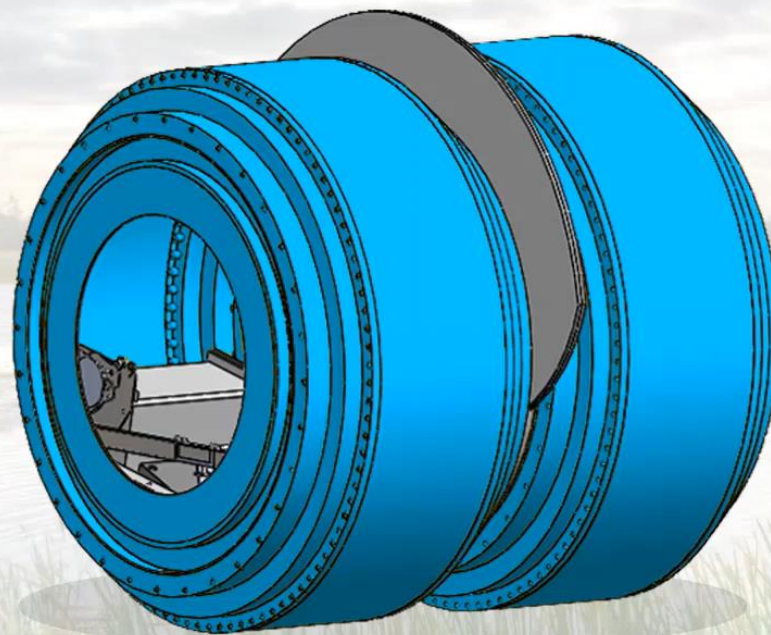
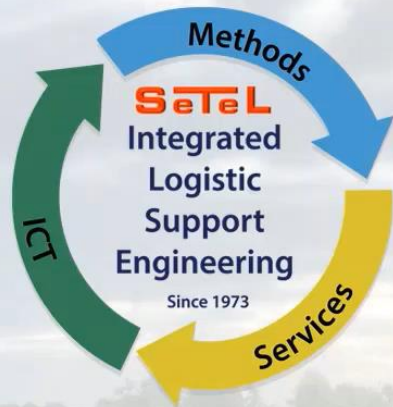
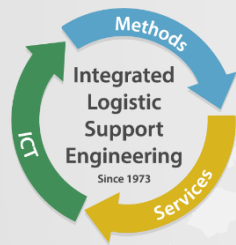


UNIVERSITÀ
degli STUDI
di CATANIA



UNIVERSITÀ
degli STUDI DELLA
Tuscia





First test in the water of MAR prototype

MAR (AMPHIBIOUS VEHICLE VERSION)



- **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



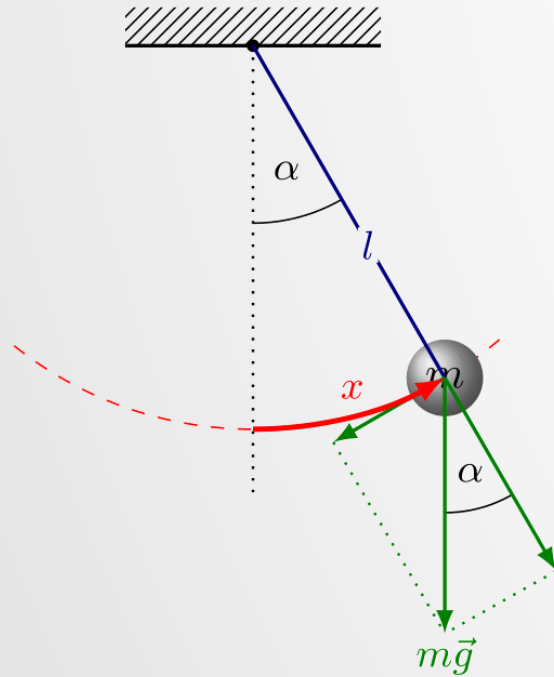
MAR



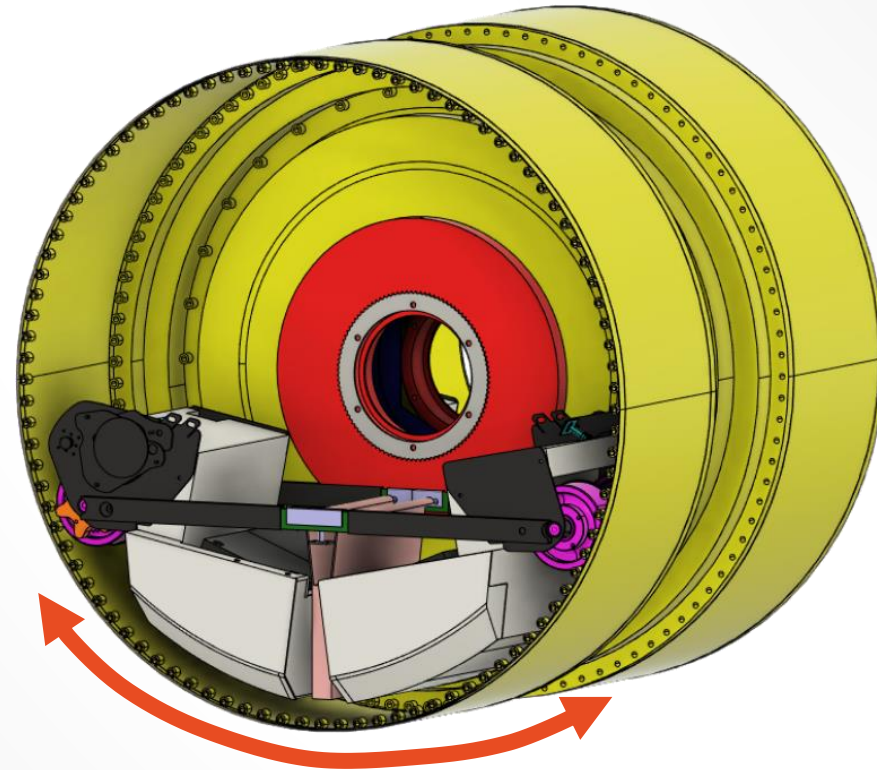
Ground Station

OPERATING PRINCIPLE

This vehicle exploits the physical principle of the pendulum.



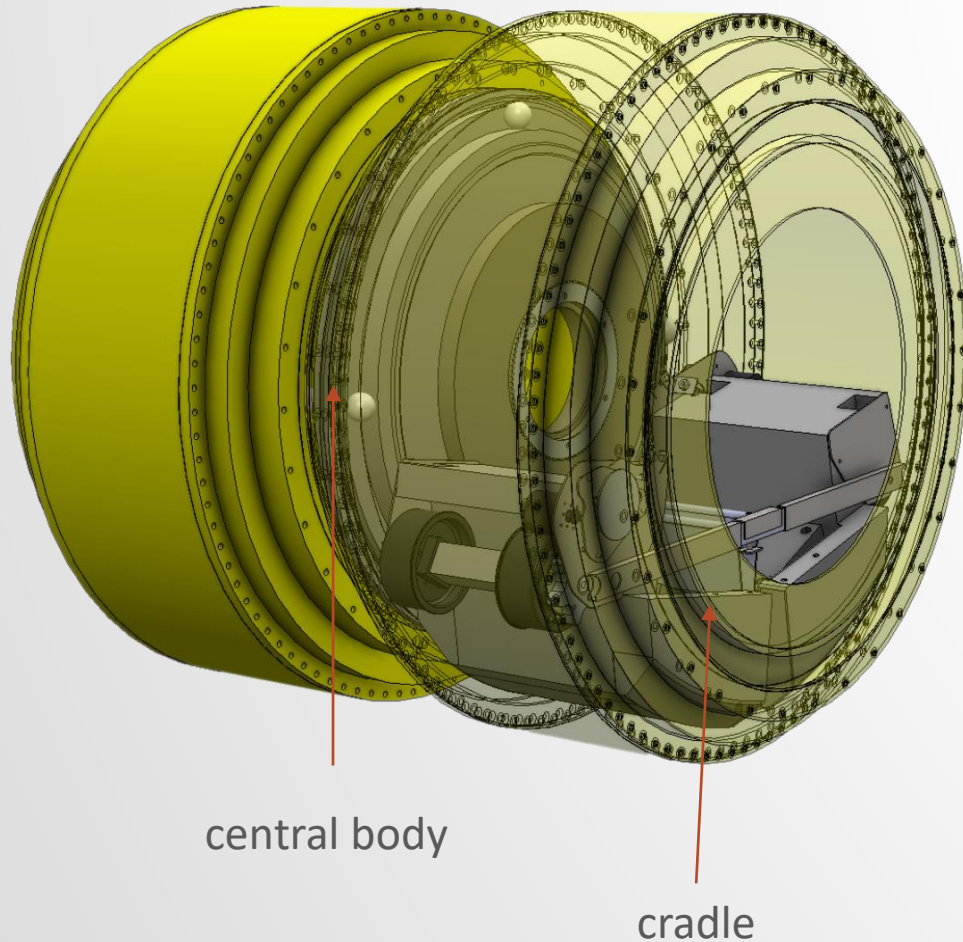
The cradle inside the wheel performs exactly this movement



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:

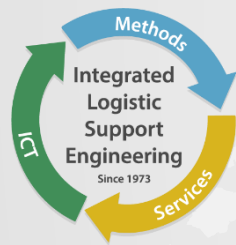
- Multispectral cameras
- Thermal camera
- Hyperspectral sensor

Other sensors:

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

Positioning devices:

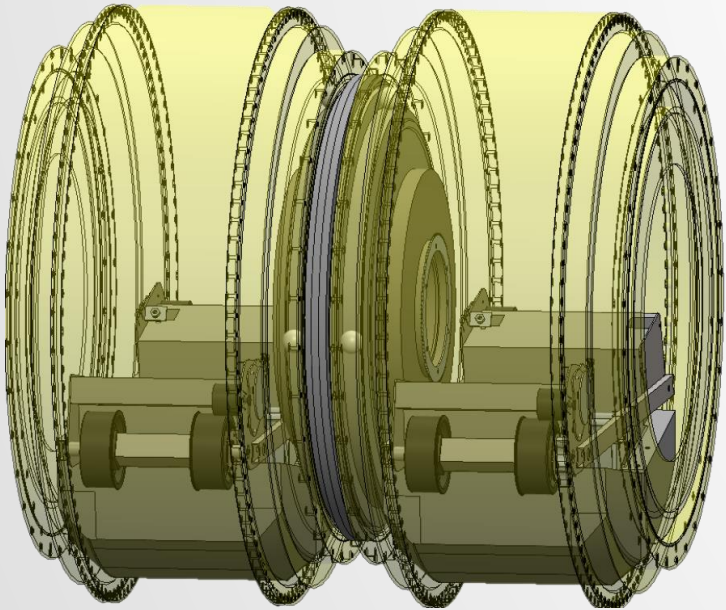
- GPS RTK
- Lidar
- IMU's



- 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

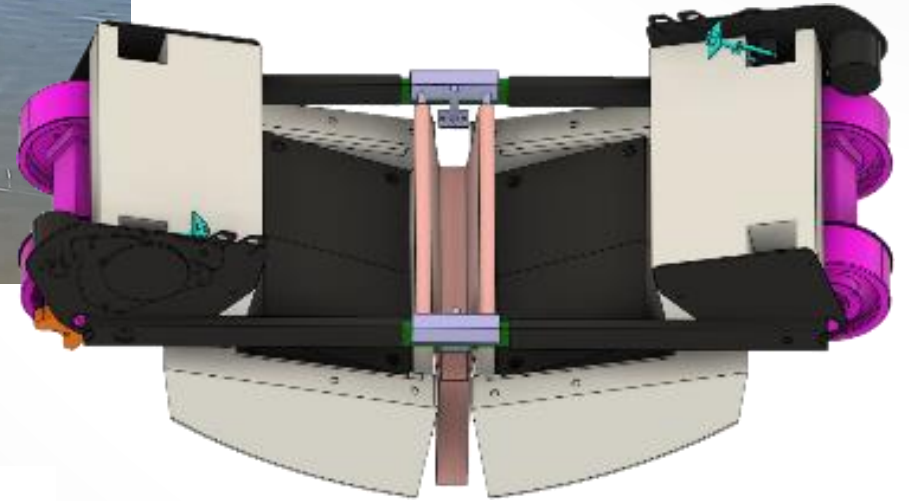
MULTIPURPOSE



TIRE ASSY



PADDLE ASSY

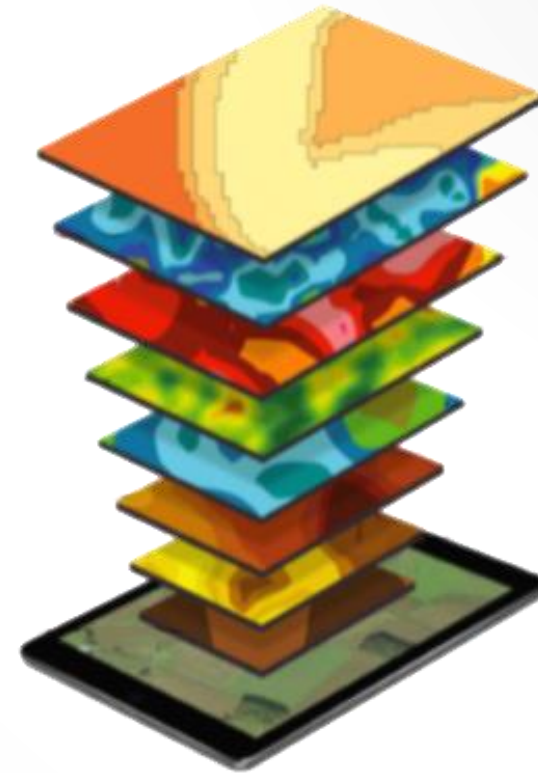


BATTERY PACK

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

POSSIBLE APPLICATION OF THE AMPHIBIOUS VERSION



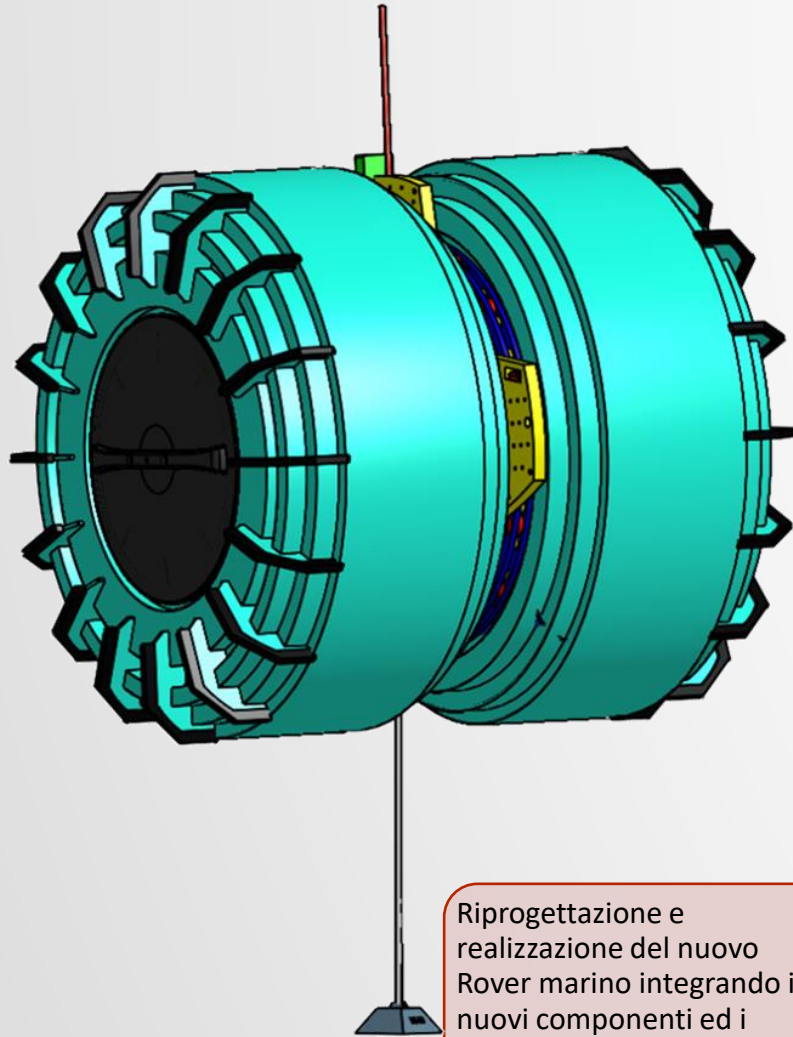
- **Visual surveillance of water surface**

When the survey is requested in shallow waters which are actually difficult to access from the sea and from land, the MAR allows easy access to these areas. **It moves from land to water without changing configuration**

- **Control of the state of water pollution**

The system based on MAR carries out a quick analysis on site and then takes sample only if pre-alarm conditions exist.

The Rover has the ability to move indifferently both on the ground and on the water surface and therefore allows rapid and economical interventions.



Fast Deployment Early Warning Environmental System



Riprogettazione e realizzazione del nuovo Rover marino integrando i nuovi componenti ed i sensori



Servizi Tecnici Logistici s.r.l.



ROMA TRE
UNIVERSITÀ DEGLI STUDI

Ricerca, progettazione e prototipazione in scala ridotta dei componenti necessari ad adattare il Rover agricolo all'ambiente marino e renderlo adatto alla mission di Early Warning e Fast Deployment

Definizione e progettazione della metodologia di analisi chimico-fisica-biologica ai fini di un Early Warning



ESSEODUE SRL
ANALISI AGRARIE ED AMBIENTALI

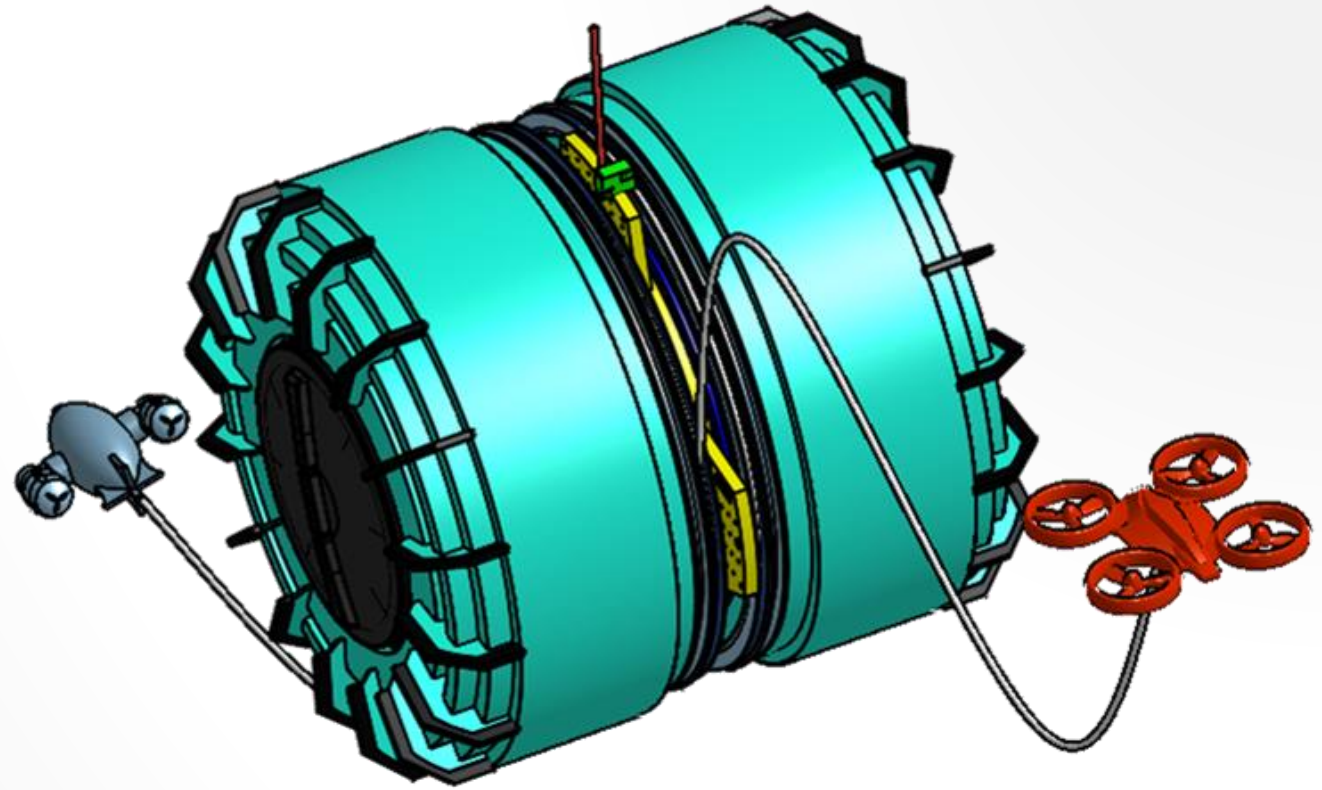
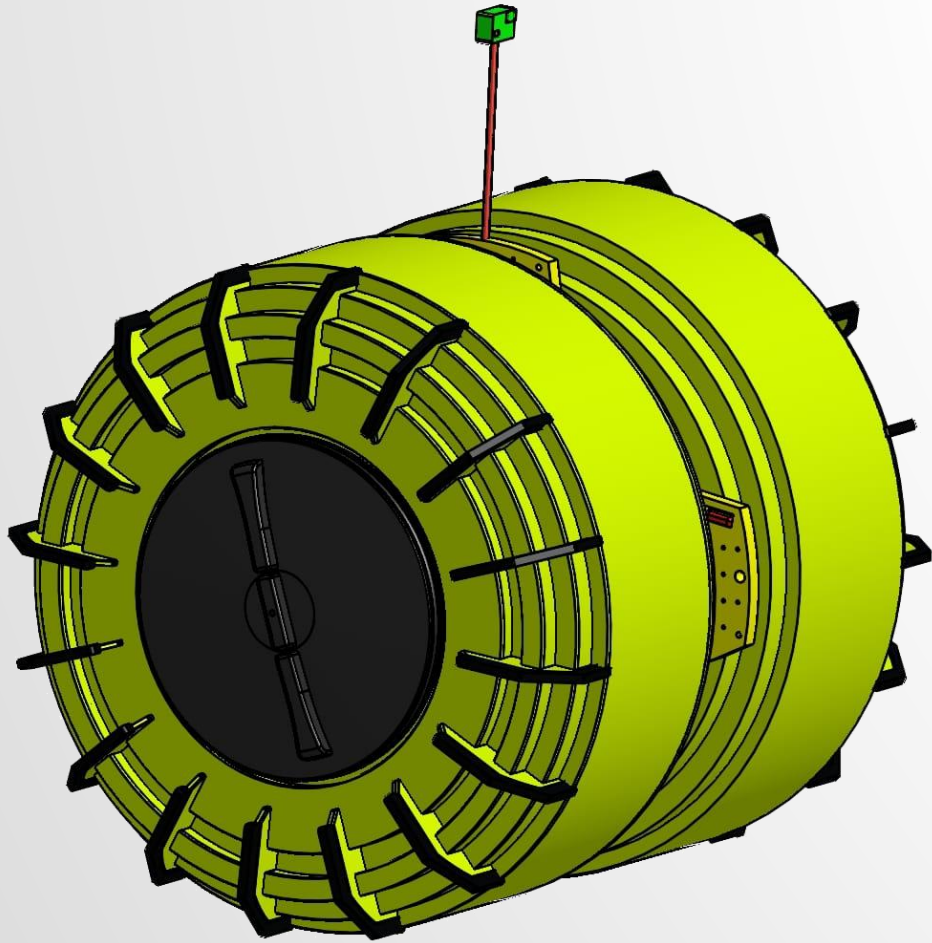


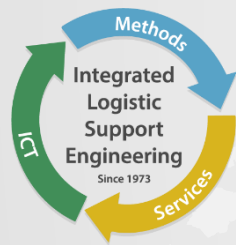
FFAAL®
The Energy Company

Studio, analisi e progettazione del sistema ottimale per l'immagazzinamento dell'energia tramite batterie



THE EVOLUTION OF MAR





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



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



Lifeguard
(coasts control)



TRANSPORT OF THE LAST MILE IN LAGOON OR RIVER AREAS





Flood relief

- ✓ Ease of movement in shallow water and muddy terrain
- ✓ Possibility of transporting food and first aid medicines
- ✓ Support for telemedicine interventions



Aquaculture / Fish farming

The amphibious rover can monitor the state of the floating cages even with critical waves and can intervene with minor maintenance.

Compared to a diver, the operational availability of the vehicle is always guaranteed, **reducing human risk and costs**





Night surveillance for aquaculture systems

The rover is equipped with a series of infrared, NIR and RGB sensors and for high-end applications it can be equipped with multi-spectral





Mussel culture

The rover could intervene both in the sowing phase (the wheels are tanks) and in the crop monitoring phase. It moves easily both on marshy ground and in shallow waters without damaging the crop



Detections in marshy environments



In the field of environmental research and for the monitoring of wet and river areas dedicated to the protection of the ecosystem



Surveillance in Archeological Sites



In the Archeological Sites for the surveillance and monitoring activities. The Sites are subject to natural environmental stress and to the constant threat of professional fishing and recreational diving.



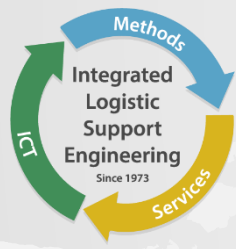
Oil spilling

Monitoring at sea and interventions in shallow waters



MORE ABOUT OPPORTUNITIES





THANKS FOR THE ATTENTION

www.eco-mar.it

www.setelgroup.com

SeTeL