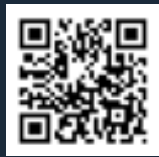


🌐 [jerico-ri.eu](http://jerico-ri.eu)

🐦 [jericori](https://twitter.com/jericori)



# Eyes on Europe's Coastal Ocean

The JERICO-RI Newsletter

Issue 1 - May 2022



# Inside this Issue

What is the JERICO-RI?	2
Editorial	3
The JERICO-RI Vision	4
Pilot Supersites for Innovative Coastal Monitoring	5
Spotlight on the Cretan Sea Pilot SuperSite	6
Study in the North Sea and English Channel Pilot SuperSite	7
JERICO-S3 Transnational Access, 3rd Call Opens	8
Linking Virtual and Physical Resources of the JERICO-RI	9
JERICO-S3 Virtual Access	10
JERICO-S3 TA Program Supports Strong RI-RI Collaboration	11

## Credits

Editor: Kathryn Keeble

Layout: Blue Lobster IT Ltd.

Contributors: Laurent Delauney, Léa Godiveau, Dominique Durand, Katri Kuuppo, Jukka Seppälä, Costas Frangoulis, Klas Ove Möller, Christine Loughlin, Paul Gaughan, Miguel Charcos Llorens, Damia Rita Espada & Kathryn Keeble.

## What is the JERICO-RI?

Laurent Delauney & Léa Godiveau

JERICO-RI is an integrated pan-European multidisciplinary and multiplatform research infrastructure dedicated to a holistic appraisal of coastal marine system changes. It is seamlessly bridging existing continental, atmospheric and open ocean RIs (Research Infrastructures), thus filling a key gap in the ESFRI (European Strategy Forum on Research Infrastructures) landscape.

The main purpose of JERICO-RI is to enable a sound understanding of the responses of coastal marine systems to natural and anthropogenic stressors. To do so, JERICO-RI adopts a systematic approach to monitor, observe, explore and analyse coastal marine systems to reach reliable information of their structure and functioning in the context of global change. Through the implementation of a set of complementary

platforms and multidisciplinary observation systems, JERICO-RI achieves observations at global, regional and local scales.

It fosters international science collaboration by enabling open access to state-of-the-art and innovative facilities, resources, FAIR data, and fit-for-purpose services.

Our vision is that by 2030, JERICO-RI will be the European gateway to long-term scientific observations and related services for European coastal marine systems at the convergence between the land, open ocean, and atmosphere; empowering European research excellence and expertise for the benefit of society.



## Editorial

Laurent Delauney & Léa Godiveau

The JERICO-S3 project is halfway through to completion, as is the JERICO-DS (Design Study). These projects consolidate the bases of the coastal observation infrastructure JERICO-RI and strongly prepare JERICO-RI's application to the ESFRI 2024 roadmap.

To date, JERICO-S3 has made significant progress in terms of harmonisation, fostering interconnections, providing services, data FAIRness and interactions with external entities in JERICO-RI regional networks. In this newsletter you will discover in particular the collaboration with AQUACOSM, an EU network of mesocosm facilities for research on marine and freshwater ecosystems.

PSS (Pilot Super Site) and IRS (Integrated Regional Site) are working hard to build and/or solidify the JERICO-RI. This newsletter proposes a description of the objectives of the PSS and details in particular two convincing results in two different regional sites. A research infrastructure must provide quality services to its users. The development of virtual access (VA) is advancing rapidly. You will find a simple and complete

explanation of Virtual Access and JERICO-CORE in this newsletter.

The third call for transnational access closed on May 3rd 2022.

The JERICO Week 2022 happened recently in March, still 100% virtual. The workshops and discussions were nonetheless very rich, and this newsletter offers you some of the highlights of the event. Be aware that at the end of June the JERICO-DAYS will happen in person, in Tallinn (Estonia) hosted by Taltech or in Lisbon (Portugal) hosted by IH. Watch the JERICO-RI website for announcements.

**“The European gateway to long-term observations and related services for the coastal marine environment”**

# The JERICO-RI Vision



## Marine coastal observatories, facilities, data and expertise for Europe

Dominique Durand

### Vision

“By 2030, the JERICO-RI will be the European gateway to long-term scientific observations and related services for European coastal marine systems at the convergence between the land, open ocean, and atmosphere; empowering European research excellence and expertise for the benefit of society.”

### Purpose

The main purpose of JERICO-RI is to enable a sound understanding of the responses of coastal marine systems to natural and anthropogenic stressors. To do so, JERICO-RI adopts a systematic approach to monitor, observe, explore and analyse coastal marine systems in order to reach reliable information of their structure and functioning in the context of global change. JERICO-RI encompasses the whole range of environmental sciences, technologies, and data sciences. It achieves observations at global, regional and local scales, through the implementation of a set of complementary platforms and multidisciplinary observation systems.

### Mission

“JERICO-RI is an integrated pan-European multidisciplinary and multiplatform research infrastructure dedicated to a holistic appraisal of coastal marine system changes. It is seamlessly bridging existing continental, atmospheric and open ocean RIs, thus filling a key gap in European marine

observations. JERICO-RI establishes a framework upon which coastal marine systems are observed, analysed, understood, and forecasted. JERICO-RI enables open access to state-of-the-art and innovative facilities, resources, FAIR data, and fit-for-purpose services, fostering international science collaboration.

### Services

- JERICO-RI investigates how innovative observation strategies and technologies can support assessing and predicting natural and anthropogenic changes in complex coastal systems and unravel the complexity of coastal processes.
- JERICO-RI provides a sustainable framework of facilities, expertise and data to support growth, development and innovation in the blue industry. The JERICO-RI aims at forming partnerships with industries contributing to marine observations by developing joint activities and promoting mutual benefit.
- JERICO-RI supports the development of downstream services by SMEs through free access to high-quality, continuous, multidisciplinary, marine environmental data.
- JERICO-RI facilitates technological innovations by providing access to a long-term pan European coastal infrastructure for proof of concept, verification and demonstration of emerging technologies in a variety of easy-accessible natural environments and with the support of a network of experts.

# Pilot Supersites for Innovative Coastal Monitoring

Katri Kuuppo & Jukka Seppälä

## Innovative monitoring and science strategies at 4 Pilot Supersites

JERICO-S3 will provide regionalised innovative monitoring and science strategies at 4 Pilot Supersites in the Gulf of Finland, the North-western Mediterranean, the North Sea and the English Channel and the Cretan Sea.

The aim of JERICO-S3 WP4, “Pilot Supersites for innovative coastal monitoring” is to provide a proof of concept for coastal Supersites, to study how the coastal observations are best integrated, for provision of sustained multidisciplinary and trans-institutional observations.

The implementation plan for each PSS contains a series with specific Actions identified for each PSS. These Actions are interlinked studies, each with coordinated partnership, objectives and description of activities. Each Action has identified the main results expected, the key users and links (internal within PSSs, within JERICO-S3 and with other communities) as well as a dissemination plan.



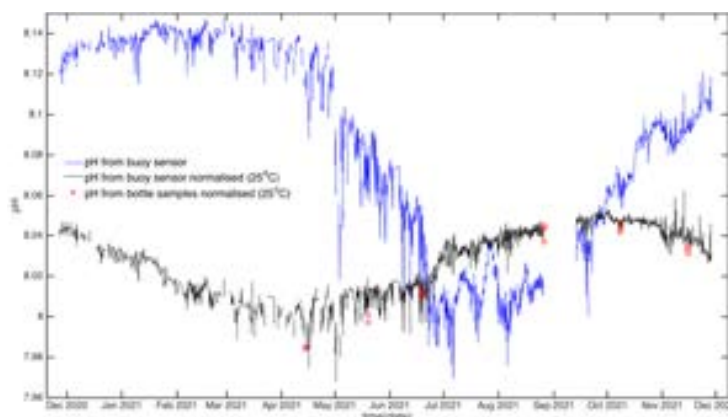
The single Actions are linked together in many ways. Within the region, they provide insight on how the Supersites may operate and which parts of the integration need to be improved. Within various research topics (e.g. carbonate system, phytoplankton), Actions will collaborate and share knowledge and practices, advancing the pan-European integration towards sustained and consistent observations.

The PSSs are being tested during a short implementation period (January 2021 to August 2022) to demonstrate how transnationally and trans-institutionally integrated multidisciplinary and multiplatform observations add value to our ability to answer the multiple key scientific and social challenges that the coastal ocean is facing.

**Gulf of Finland ▪ North-western Mediterranean  
North Sea and the English Channel ▪ Cretan Sea.**

# Spotlight on the Cretan Sea Pilot SuperSite: First Annual pH cycle in the Cretan Sea

Costas Frangoulis



The Cretan Sea is a subpart of the ultra-oligotrophic eastern Mediterranean Sea. In this area, major research challenges include gaining a better understanding of the trends and drivers of pH and the air-sea CO<sub>2</sub> flux as well as improving our estimates of net primary productivity (a large part of the primary production being at depths out of satellite reach for most of the year). The JERICO-S3 Cretan Sea Pilot SuperSite (PSS) aims to demonstrate the contribution of a PSS approach to address such challenges.

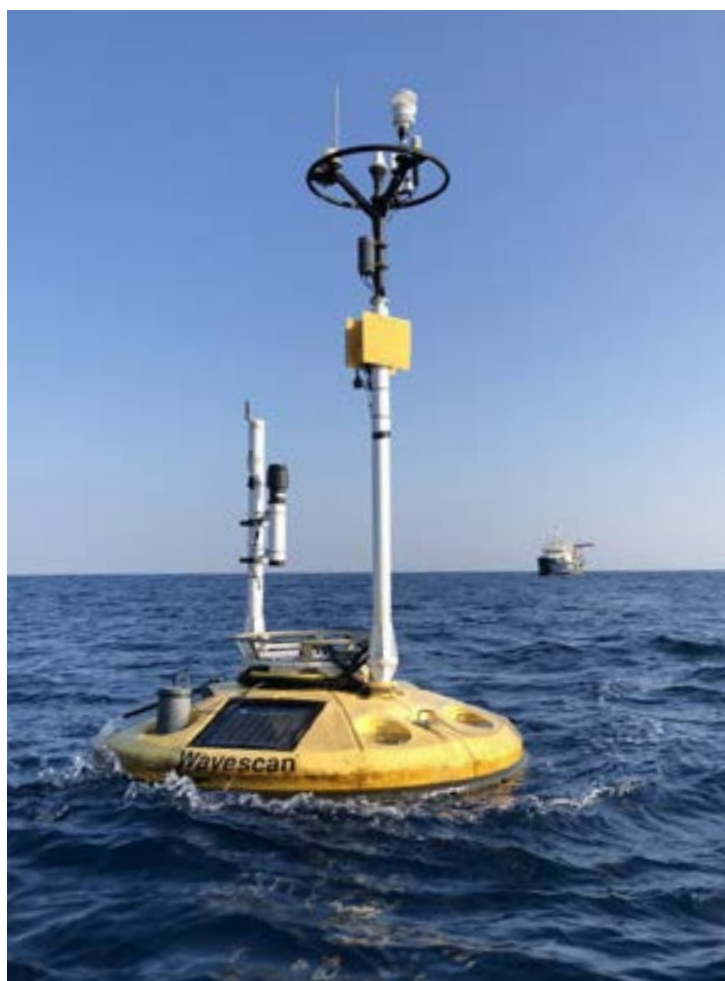
The absorption of excess atmospheric CO<sub>2</sub> by the oceans causes changes in seawater pH, a phenomenon called ocean acidification. To contribute to ocean acidification observation, since December 2021 a pH sensor deployed in the Cretan Sea PSS is providing pH data. The sensor (SP200-SM, Sensorlab) deployed at the subsurface, on the POSEIDON Heraklion Coastal Buoy (HCB) provides pH data every 3 hours in near real-time (NRT). In parallel, water samples for pH analysis are taken approximately every month to check the sensor's operation. The samples are analysed using a lab pH instrument (AFT-pH, Sunburst Sensors), which is regularly checked against the TRIS buffer as reference material.

It is the first time that an annual pH cycle has been obtained in the Cretan Sea and to the best of our knowledge the second time at high frequency (<day) in the eastern Mediterranean (another cycle done in

Saronikos Gulf in 2013; González-Dávila et al. 2016). The delayed mode data provided by the pH sensor, after processing, are in good agreement with data from samples (shown in the figure).

A preliminary analysis suggests that temperature is the dominant factor controlling the diel to seasonal pH variability. The NRT data quality control procedure is currently under improvement to automatically include a correction from temperature and salinity data obtained by the nearby conductivity-temperature sensor.

The activity is organised jointly with the Cretan Sea PSS partners (HCMR, NIVA, SYKE, CNRS-MIO), and will run until November 2022 (i.e. two annual cycles).



# Using Plankton Imagery to Study Ecosystem Dynamics in the North Sea and English Channel

Klas Ove Möller

The global coastal areas are among the most productive ecosystems in the world and are particularly valuable from both an ecological and an economic perspective. Phytoplankton and zooplankton as well as organic particles and aggregates (“marine snow”) form the basis of and play a fundamental role in the food webs and the biological carbon cycle of the coast. They therefore have a direct impact on economically important fish stocks and the global climate. For these reasons, it is necessary to understand the processes that influence the spatial and temporal distribution as well as the origin, characteristics and biodiversity of these organisms and particles. However, these processes are still insufficiently resolved, since coastal ecosystems are characterised by immense variability and traditional measurement methods are limited in their spatial resolution and time-consuming.

The JERICO-S3 project has established 4 innovative Pilot SuperSites for coastal monitoring that aim to fill gaps in understanding coastal marine environments. One of the key focuses of the North Sea and English Channel Pilot SuperSite is to improve understanding of the interconnected forces that govern energy budget, material fluxes, balances, and the factors directly controlling ecosystem dynamics.

In December 2020, the Helgoland Underwater Observatory (HUWO) was deployed and tested. It is now fully operational, equipped with a CPICS plankton and particle camera system as well as CTD, oxygen

sensor and ADCP. This structure is one key element of the North Sea PSS and is maintained jointly by Hereon and AWI.

The HUWO’s main element is a lander structure, which can be programmed to move vertically through the water column with remotely controlled winches, utilising the buoyancy of floats attached to its outer edges for the upward movement and straps connected to the winch and anchored to a base on the seafloor to move down. Cameras and sensors are mounted on this vertical profiler. Utilising this set-up, a continuous time series of plankton and particle diversity, biomass, and behaviour in the North Sea near Helgoland is currently being collected.

All Images are sent in real-time to shore and are classified automatically using AI and different machine learning approaches. These observations allow conclusions regarding the biodiversity, impact of climate change, ecosystem productivity and the occurrence of invasive species at the PSS.

The HUWO is located in the Margate experimental field at a water depth of up to 10 m. Additional physical, meteorological and chemical data collected in the same area can be closely associated with data collected at the HUWO.



# Coastal Ocean Services

## JERICO-S3 Transnational Access Opens its 3rd Call

Christine Loughlin & Paul Gaughan



The third Transnational Access call is now open until March 3rd 2022. Please note, all proposed projects must be scheduled to complete the experiment with the final report submitted by September 2023. The Transnational Access provides access (free of charge) to high-quality infrastructures and support services at unique multi-disciplinary facilities consisting of a range of gliders, fixed platforms, ferryboxes, cabled observatories, HF radar, benthic stations, and bio-sensors. Applicants will be able to apply for a travel grant for the purpose of visiting the host facility for conducting their experiment.

Successful applicants will be facilitated in conducting first-class experiments on one or more of the multi-disciplinary coastal observing systems thus maximising impact for science, environmental managers, industries and other relevant stakeholders. Users will have access to the best available equipment and knowledgeable personnel at each of the facilities

to enable improved research outputs and scientific excellence. JERICO-S3 TA supports a diverse international user group and proudly supported the International Women in Science Day this February by highlighting 3 women Principal Investigators and the TA projects that they lead. We welcome all project user groups including those from non-EU countries subject to the terms and conditions outlined in the guidance notes.

In this third call, JERICO-S3 encourages projects between JERICO-S3 Research Infrastructures and AQUACOSM-plus TA. As a specific action, JERICO-S3 and AQUACOSM-plus are jointly studying how extreme events affect plankton ecosystems through both observations of natural communities and experimental approaches at selected sites (Cretan Sea, North-West Mediterranean and Baltic Sea). Currently, AQUACOSM-plus TA has an open call for SYKE MRC lab project which would facilitate a unique RI-RI collaboration.

More than 4400 days of Transnational Access is offered between June 2020- January 2024 by 43 integrated marine coastal observation infrastructures located at 21 JERICO-RI partners throughout Europe.



**43 integrated marine coastal observation infrastructures located throughout Europe.**



# JERICO-CORE

## Linking JERICO-RI's Virtual and Physical Resources

Miguel Charcos Llorens

JERICO-CORE aims to provide a single access point to all JERICO-RI resources. It will be a unified central hub of the JERICO-RI facilitating discovery, access, management and interoperability of all JERICO-RI resources. This will include services, datasets, software, best practiscses, manuals, publications, organisations, projects, observatories, equipment, data servers, e-libraries, support, training and similar assets.

The JERICO-CORE infrastructure collects information about resources through the existing providers of data, metadata, software services, documents and videos. Details of these assets will be interconnected in a knowledge base catalogue that is at the core of the infrastructure. It will offer a broad view of the data, as well as the observation and operational processes and capabilities of the JERICO-RI.

The JERICO-CORE inventory represents the link between the virtual and physical assets of the

JERICO-RI that are distributed worldwide among disparate systems. The cross-linked nature of the information in the JERICO-CORE inventory enables discovery of the resources and access to the original source. Therefore, the knowledge of the relationship between data, information, metadata, documentation, tools and workflows facilitates the traceability of assets and enhances the FAIRness of the data.

These resources and services will be accessible to scientists, the private sector, society, government and technical operators through customised user interfaces to meet their specific requirements. Additionally, external users and international data infrastructures will benefit from machine-to-machine interfaces to automate access to JERICO-RI assets. Machine-to machine access to services and the underlying resources will enhance the interoperability of JERICO-RI to other international infrastructures and allow research across domains and fields.



# Coastal Ocean Services

## JERICO-S3 Virtual Access

Damia Rita Espada



### What is Virtual Access?

Virtual Access (VA) means free access to users provided through communication networks; the available services or resources can be simultaneously used by an unlimited number of users and the users are not selected. VA can have very different formats: a website, an API, a repository on GitHub... and it can expose very different types of resources: datasets, added-value products, software, documents, training modules, data processing capabilities...

The European Commission (LEA), in its effort to support open access, finances Virtual Access that is 'free of charge at the point of use'.

### How does JERICO support VA?

JERICO is driven by the major European institutions that work in coastal oceanography. Some of these

institutions provide VA to their resources under an open access policy.

Joining forces under JERICO, VA providers benefit from a well-established EU framework specifically designed for accessing Research Infrastructures, as well as a centralized access metrics system (VAMS), the feedback from a VA Expert Panel that reviews each VA, outreach activities carried out for the VA under JERICO, data management expertise, work to identify new users and user categories, and JERICO-CORE which, as explained in the previous page, enhances the discoverability of the VA services. Through JERICO, these institutions also receive financial support from the EU H2020 program to cover part of the incurred costs to maintain their VA.

### What VAs are included in JERICO?

There are currently 20 VA services under JERICO-S3 and two additional VA services are under construction at this point. The full list is available at:

<https://www.jerico-ri.eu/virtual-access/>



**20 Virtual Access providers working to open the coastal ocean to users and stakeholders.**

# JERICO-S3 TA Program Supports Strong RI-RI Collaboration

Christine Loughlin & Paul Gaughan

The Transnational Access Program is supporting two RI-RI collaboration projects with AQUACOSM-plus scheduled to begin work this spring. The two sister projects, AQUA-action 1 & 2, are led by Dr Stella A. Berger from Leibniz Institute of Freshwater Ecology and Inland Fisheries (IGB), Germany. Dr Stella A. Berger also leads the AQUACOSM-plus TA program.

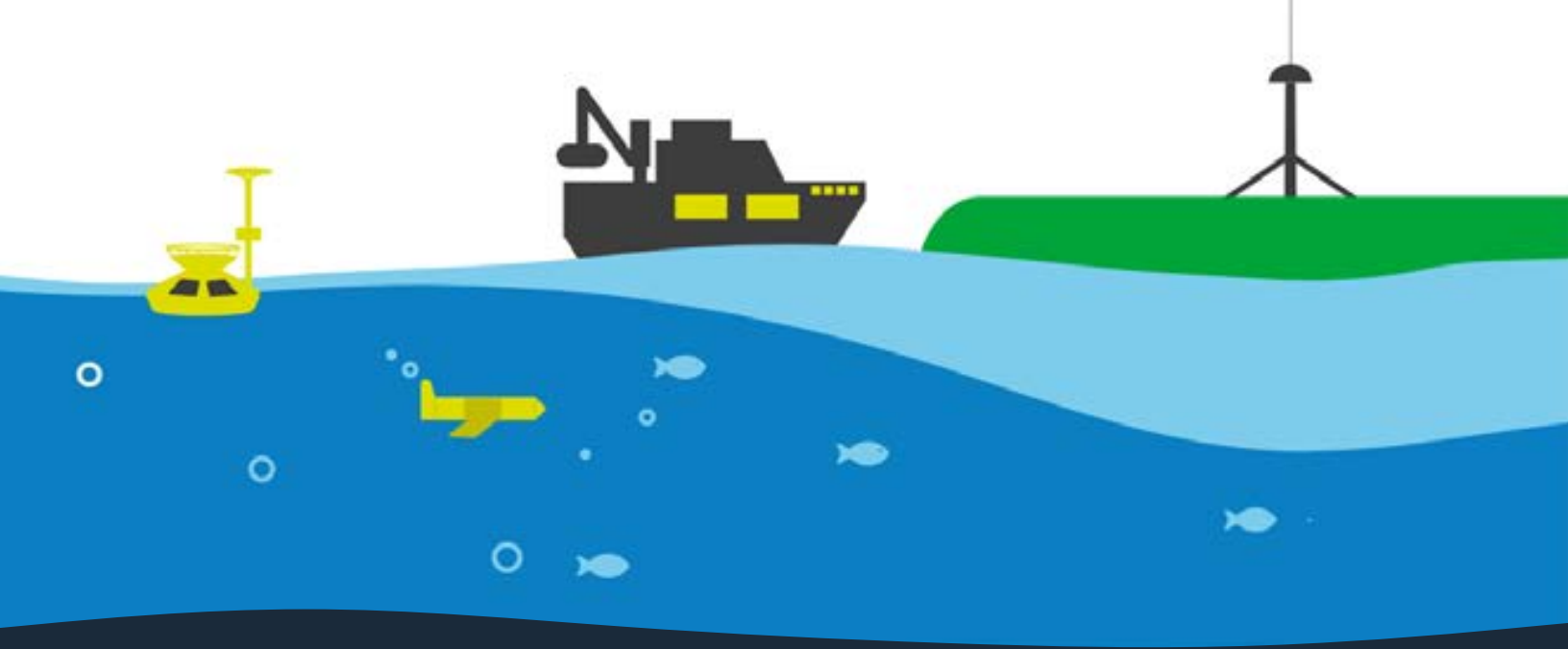
AQUACOSM-plus advances a European mesocosm-based aquatic RI by integrating the leading mesocosm infrastructures into a coherent, interdisciplinary, and interoperable network covering all ecoregions of Europe. These projects form a strong collaboration between the European coastal and mesocosm RIs. Benefits of RI-RI collaborations include combining observational data and modelling approaches and capacity sharing.

The JERICO-S3 TA facilities at the SYKE Marine Research Centre Lab (Finland) will host AQUA-action 1 and the Uto Atmospheric and Marine Research Station, Finland will host AQUA-action 2. These facilities form part of the JERICO-S3 Gulf of Finland Pilot SuperSite.



The projects will study how extreme events affect plankton communities. They provide a unique opportunity to test IGB LakeLab sensors in the Baltic Sea conditions, transfer the knowledge and best practices in plankton imaging between Research Infrastructures and conduct a scientific plankton ecosystem study combining experimental and observational approaches. The RI-RI collaboration will use Artificial Intelligence for analysing plankton images on several instrument platforms.





Visit us



Email: [jerico-s3@ifremer.fr](mailto:jerico-s3@ifremer.fr)  [jerico-ri.eu](http://jerico-ri.eu)



This project has received funding from the European Commission's Horizon 2020 Research and Innovation programme under grant agreements No 871153 and 951799. Project coordinator: IFREMER, France. The information and views of this website lie entirely with the authors. The European Commission is not responsible for any use that may be made of the