



# iImagine

## D5.1 1st periodical assessment of iImagine VA services

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## Document Description

### D5.1 1st periodical assessment of iMagine VA services

#### Work Package 5

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## Description

Abstract	The report provides the first year usage statistics and assessment of the 5 thematic, AI-powered image analysis services provided under virtual access in WP5.
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## Executive summary

This report should provide an assessment at the end of M12 of the WP5 installations provided by the iMagine project under the Virtual Access (VA) mechanism. Normally, such an assessment should be based on the metrics collected from the WP5 installations during the first two periods of observation, namely M01-M06 and M07-M12.

The WP5 installations concern the Imaging Analysis Services as set up by the 5 mature marine imaging use cases:

- Marine litter assessment service
- Zooscan taxonomic identification service
- Marine ecosystem monitoring service
- Oil spill detection service
- Flowcam phytoplankton identification

However, so far no metrics could be reported for these planned WP5 installations as their Imaging Analysis Services are still under co-development and integration in the Competence Centre (WP3). Therefore, their delivery and start as operational service in WP5 has not been achieved yet.

The challenge for the 5 mature marine imaging use cases is to develop these further and adapt them for deployment at the generic iMagine AI framework, which is set up as part of WP4. The development of the use cases takes place in WP3 and two stages are being undertaken, namely a first stage in which a technical development roadmap has been formulated (see D3.1). This is followed by a second stage, currently ongoing, focusing on the actual adaptation and deployment of the 5 mature use cases at the generic iMagine AI framework.

Following the current developments in WP3, it is expected that the actual delivery and start of operation as WP5 services for all 5 use cases will be around month 22-24 (July-August 2024), while some of these might achieve this status earlier.

## 1. Introduction

Virtual Access (VA) is a financial instrument to reimburse the access provisioning costs to access providers. This instrument is provided by the European Commission to increase the sharing of research infrastructures and services that otherwise would not be available to international user groups.

In VA, the services – also called “installations” – must be made available ‘free of charge at the point of use’ for European or International researchers. VA access is open and free access to services through communication networks to resources needed for research, without selecting the researchers to whom access is provided.

Virtual Access to services of the iImagine catalogue applies to the following 2 categories:

1. AI platform and compute infrastructure services in WP4
2. Imaging data and analysis service in aquatic sciences in WP5

This document provides Virtual Access metrics and assessment for WP5 about the 1st year of the project (Sep 2022 – Aug 2023). However in practice, there are not yet any metrics as the 5 mature marine imaging use cases are still under development and their planned Imaging Analysis Services have not yet been deployed at the generic iImagine AI framework.

Following the current developments in WP3, it is expected that the actual delivery and start of operation as WP5 services for all 5 mature use cases will be around month 22-24 (July–August 2024), while some of these might achieve this status earlier.

### 1.1 WP4 Installations

Within iImagine project 5 installations are part of Virtual Access work package 5. These installations support the baseline computing infrastructure of iImagine as part of the following services:

- **Marine litter assessment service** (provided by DFKI with OGS and MARIS).
- **Zooscan taxonomic identification service** (provided by SU)
- **Marine ecosystem monitoring service** (provided by EMSO, UPC, IFREMER, and MI)
- **Oil spill detection service** (provided by CMCC and OrbitalEOS)
- **Flowcam phytoplankton identification** (provided by VLIZ): Metrics definition

## 1.2 Metrics

For each installation several metrics has been defined between the provider and WP5 leader, taking into account following categories:

- Number of users – Number of unique users of the AI image processing service
- Number of images –Number of images processed per year or Names of images ingested
- Number/names of the countries reached – the goal of this metric was to report how broadly the service is used and how the geographical coverage is changing with time.

## 2. Introduction

### 2.1 Marine litter assessment service

Description	This service will support ingestion, storage, analysis and processing of drone images, observing litter floating at surface waters in seas, rivers and lakes, and lying at beaches and shores, delivering standardised classified data sets, which are fit for purpose of environmental management and indicators.
Task	T5.1
URL	
Service Category	
Service Catalogue	
Providers	DFKI, MARIS, OGS
Location	Original service at DFKI - Germany
Duration	36 months
Modality of access	No remote access currently, but will be once deployed at iMagine platform
Support offered	Support of users and operation, including training of users
Operational since	Will become operational after the first project year
User definition	researchers from academics, monitoring agencies, NGO's, environmental management organisations



### 2.1.1 Metrics

Metric name	Baseline	Define how measurement is done	M1-M6	M7-M12
Number of unique users of the AI image processing service	10	Account management of registered users and image processing runs by iMagine platform	0	0
Number of images processed per year	1500	Account management of registered users and image processing runs by iMagine platform	0	0
Names of images ingested	200000	Account management of registered users and image processing runs by iMagine platform	0	0
Number of countries of users	7	Account management of registered users and image processing runs by iMagine platform	0	0
Names of countries reached	Germany, Slovakia, BIH, Vietnam, Cambodia, The Philippines, Myanmar	Account management of registered users and image processing runs by iMagine platform	0	0

### 2.1.2 Assessment

No usage during the period as the service is still under development.

## 2.2 Zooscan taxonomic identification service

Description	EcoTaxa is a web application coupling a database with AI tools to accelerate the labelling of large quantities of plankton images by human operators, who are trained biologists but have no AI expertise. It allows importing images and their metadata, extracting features through deep learning networks, training AI classifiers based on the labelled images in the whole database, interacting with users to confirm or correct those labels, and exporting the resulting data. ZooProcess is the image analytics pipeline of EcoTaxa, for plankton images collected with the ZooScan instrument. ZooProcess will be advanced and ported to the iMagine framework.
Task	T5.2

#### D4.2 1st Periodical assessment of AI and Infrastructure services

URL	
Service Category	
Service Catalogue	
Location	Currently: distributed, Ultimately: EGI + Villefranche-sur-Mer, France
Duration	36 months
Modality of access	No remote access currently
Support offered	Training of users, assistance for data formatting for upload, assistance for data exploitation
Operational since	2010
User definition	scientific research groups (mostly used by technicians) + environment monitoring companies/agencies

#### 2.2.1 Metrics

Metric name	Baseline	Define how measurement is done	M1-M6	M7-M12
Number of unique zooscan+zooprocess users	~300 / y	no user tracking is available. We estimate >300 persons, from around the world since 150 ZooScans have been sold worldwide, all use ZooProcess, most are used by more than a single operator.	0	0
Number of scans (i.e. images) processed per year	~10000 / y	1 scan per working day, 150 zooscans => 10k scans	0	0

#### D4.2 1st Periodical assessment of AI and Infrastructure services

Number of countries in which the current version of zooprocess is used	30	Number of countries in which a zooscan has been purchased	0	0
Names of countries reached	France, Spain, Italy, Belgium, UK, Germany, etc. in the EU, Brazil, US, Canada, China, Japan, Korea	Countries in which a zooscan has been purchased	0	0

### 2.2.2 Assessment

No usage during the period as the service is still under development.

### 2.3 Marine ecosystem monitoring service

Description	This service will be provided for the processing of video imagery, collected by cameras at EMSO underwater sites, identifying and further analysing interesting images for purposes of ecosystem monitoring. The service will be operated from several EMSO sites where underwater videos are being collected. The three sites of this installation provide complementary capabilities for the whole pipeline of image collection, selection, AI-based analysis and annotation. EMSO-Obsea (UPC - SE) and EMSO-Azores (Ifremer - FR) have experience with using AI for the analysis of selected images for identification of biota. EMSO-SmartBay has experience with preselecting interesting images from the sizable video footage. Ifremer has experience with data management of EMSO raw and annotated imagery.
Task	T5.3
URL	
Service Category	
Service Catalogue	
Providers	IFREMER, MI, UPC

#### D4.2 1st Periodical assessment of AI and Infrastructure services

Location	Vilanova i la Geltru coast (Barcelona, Spain) Lat. : 41° 10,93' N - Long. : 001° 45,15' E
Duration	36 months
Modality of access	Remote or partially remote
Support offered	support and training
Operational since	0
User definition	Researchers, monitoring agencies, NGOs, environmental management organisations...

### 2.3.1 Metrics

Metric name	Baseline	Define how measurement is done	M1-M6	M7-M12
Number of user groups / institutions accessing Obsea data (real time or data bank or images and multiparametric data)	10	Account management of registered users and image processing runs by iMagine platform	0	0
Number of images generated and archived per year on the data bank	3000	Account management of registered users and image processing runs by iMagine platform	0	0
Number of countries of users	3	Account management of registered users and image processing runs by iMagine platform	0	0
Names of countries reached	France, Italy, etc	Account management of registered users and image processing runs by iMagine platform	0	0

### 2.3.2 Assessment

No usage during the period as the service is still under development.

## 2.4 Oil spill detection service

Description	The WITOIL (Where Is the Oil) service will be made available to reconstruct and validate real events such as accidents or illegal oil spills. In its forecasting mode it can be used to predict the impact of pollution on marine ecosystems for maritime authorities responsible for contingency planning and response. The service will be augmented by the further development of AI algorithms for oil spill detection, with the use of the iMagine AI framework. The service will also integrate and offer all the scientific products, such as oil spills detected by remote sensing and oil spill model results added value datasets, for further analysis.
Task	T5.3
URL	
Service Category	
Service Catalogue	
Providers	CMCC, OrbitalEOS
Location	Via Augusto imperatore 16, Lecce (Italy)
Duration	36 months
Modality of access	web interface
Support offered	Support of users and simulations, including training of users
Operational since	0

#### D4.2 1st Periodical assessment of AI and Infrastructure services

User definition	researchers from academics, monitoring agencies, NGO's, environmental management organisations
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### 2.4.1 Metrics

Metric name	Baseline	Define how measurement is done	M1-M6	M7-M12
Number of unique users of the AI image processing service	100	Account management of registered users and image processing runs by iMagine platform	0	0
Number of images processed per year	1000	Account management of registered users and image processing runs by iMagine platform	0	0
Number of images ingested	200	Account management of registered users and image processing runs by iMagine platform	0	0
Number of countries of users	10	Account management of registered users and image processing runs by iMagine platform	0	0
Names of countries reached	France, Italy, etc	Account management of registered users and image processing runs by iMagine platform	0	0

### 2.4.2 Assessment

No usage during the period as the service is still under development.

## 2.5 Flowcam phytoplankton identification

Description	This service will support image-based taxonomic identification of plankton particles in the micro-plankton size range (including photosynthetic plankton or phytoplankton). As part of the service a long-term dataset of over 1.4 million expert validated plankton images is being made available to serve as a high-quality training dataset for new AI supported plankton identification. Enabling access
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#### D4.2 1st Periodical assessment of AI and Infrastructure services

	to both the dataset and the analytical algorithms from the iMagine AI framework will support additional users to set up and run their own plankton image recognition pipeline.
Task	T5.5
URL	
Service Category	
Service Catalogue	
Location	Original service at VLIZ - Belgium
Duration	36 months
Modality of access	No remote access currently, but will be once deployed at iMagine platform
Support offered	Support of users and operation, including training of users
Operational since	0
User definition	Single researchers, environmental management organisations

#### 2.5.1 Metrics

Metric name	Baseline	Define how measurement is done	M1-M6	M7-M12
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#### D4.2 1st Periodical assessment of AI and Infrastructure services

Number of unique users of the AI image processing service	5	Account management of registered users and image processing runs by iMagine platform + internal and affiliated user count	0	0
Number of images processed per year	300,000	Account management of registered users and image processing runs by iMagine platform + internal and affiliated user count	0	0
Number of images ingested	1,400,000	Account management of registered users and image processing runs by iMagine platform + internal and affiliated user count	0	0
Number of countries of users	1	Account management of registered users and image processing runs by iMagine platform	0	0

#### 2.5.2 Assessment

No usage during the period as the service is still under development.