



D5.3 Final periodical assessment of Imaging VA services

Abstract

The report provides the third-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 provides an assessment at the end of M36 of the WP5 installations provided by the iMagine project under the Virtual Access (VA) mechanism. This assessment is based on the metrics collected from the WP5 installations which have been deployed and become operational during the project.

WP5 installations are the Imaging Analysis Services set up by the 5 mature marine imaging use cases from the WP3 development activities:

1. Marine litter assessment service
2. Zooscan taxonomic identification service
3. Marine ecosystem monitoring service
4. Oil spill detection service
5. Flowcam phytoplankton identification

Originally, all five mature use cases were planned to be fully deployed and operational at M24, meeting milestone M5.4. However, in practice this applied only for two services: UC1 – Marine litter assessment service and namely UC5 – Flowcam phytoplankton identification service. The other three use cases reached production stage a few months later, mostly in September – October 2024. These delays were experienced because user interface and module developments, as well as AI model training took longer than expected.

The report gives the Virtual Access (VA) metrics for the last period (M25 – M36) and compares with the previous period (M13 – M24). The metrics highlight diverse levels of engagement across the 5 services:

1. The Marine litter assessment service recorded 26 users across 3 countries who processed 95 images.
2. The ZooScan service had 9 users processing 1,150 scans.
3. The Marine ecosystem monitoring service showed diverse uptake: EMSO–Obsea processed 1.3 million images, EMSO–SmartBay annotated over 10,000, and EMSO–Azores supported 6 user groups across 6 countries.
4. The Oil spill detection service supported 80 users who processed 172 images.
5. The Flowcam phytoplankton identification service served 129 unique users and processed 2.26 million images, expanding to 10 countries, driven by international collaborations and workshops.

1 Introduction

Virtual Access (VA) is a financial instrument to reimburse 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:

- AI platform and compute infrastructure services in WP4
- Imaging data and analysis service in aquatic sciences in WP5

This document provides Virtual Access metrics and a comparison between the 2nd (Sep 2023 – Aug 2024) and 3rd year (Sept 2024 – Aug 2025) of the project. In practice, two use cases were taken into production in the 2nd year, UC1 – Marine litter assessment service which then reached near-operational stage, and UC5 – Flowcam phytoplankton identification, which then reached full operational stage. All other mature use cases took a few months more to get into full production, mostly in September – October 2024.

1.1 Installations

Within iImagine, 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:

1. **Marine litter assessment service** (provided by DFKI with OGS and MARIS).
2. **Zooscan taxonomic identification service** (provided by SU)
3. **Marine ecosystem monitoring service** (provided by EMSO, UPC, IFREMER, and MI)
4. **Oil spill detection service** (provided by CMCC and OrbitalEOS)
5. **Flowcam phytoplankton identification** (provided by VLIZ)

1.2 Metrics

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

- Number of users – Number of unique users of the AI image processing service

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- 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.

The production metrics per installation are given in **Chapter 2** for the 2nd and 3rd project years. In the tables reference is made to the baseline, which is the situation per Use Case at the start of the iMagine project, based upon earlier activities. Also, some details about their final production configuration are given.

2 Installations

2.1 Marine litter assessment service

Description	This service supports 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	https://www.imagine-ai.eu/service/litter-assessment-service
Service Category	Thematic
Service Catalogue	Image Analysis Services for Aquatic Sciences
Providers	DFKI, MARIS, OGS
Location	Original service at DFKI – Germany
Modality of access	AI model and processing methodology available on the iMagine Marketplace
Support offered	Support of users and operation, including training of users
Operational since	near-operational since June – July 2024; full operational since September 2024

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User definition	Researchers from academics, monitoring agencies, NGO's, environmental management organisations
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2.1.1 Metrics

Metric name	Baseline	Define how measurement is done	M13-M24	M25-M36	TOTAL
Number of unique users of the AI image processing service	10	Account management of registered users and image processing runs by iMagine platform	10	16	26
Number of images processed per year	1500	Account management of registered users and image processing runs by iMagine platform	1	94	95
Numbers of images ingested	200000	Account management of registered users and image processing runs by iMagine platform	0	0	0
Number of countries of users	7	Account management of registered users and image processing runs by iMagine platform	1	2	3
Names of countries reached	Germany, Slovakia, BIH, Vietnam, Cambodia, The Philippines, Myanmar	Account management of registered users and image processing runs by iMagine platform	Italy	Germany, Canada	

2.1.2 Assessment

The service provides an operational environment at the iMagine platform for the detection and quantification of plastic litter floating on the water surface. It allows users to ingest drone footage of their area of interest to get back an analysis of the presence and count of litter items. The AI model and processing methodology are available on the iMagine Marketplace. In addition to providing inference for image classification, scripts were developed and made available that allow users to fine-tune the pre-trained models to their own

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data. The service utilises the OSCAR instance operated by iMagine as an inference service to invoke the model from an external application portal. The training datasets are published on Zenodo. The Deliverable D1.4 – Final Data Management Plan – gives more details about the publishing of training data sets as part of the iMagine project.

Explanation of the reported numbers in time:

Number of unique users of the AI image processing service

The presented numbers are a combination of users who were in contact with the service providers or got access through access requests, and unique cloners on git. The unique cloners in git are a snapshot of the past 14 days, recorded on the day the VA metrics were entered.

Number of images processed per year:

The models provided analyse the data on a tile basis. Users can therefore either analyse orthophotos that have already been divided up or use the pre-processing steps provided to analyse an entire orthophoto. While an orthophoto of unknown size was analysed during the first reporting period, parts of different orthophotos were analysed on a tile basis during the second reporting period. The number of images processed by users that chose the local deployment option were not tracked.

Number of countries:

Orthophotos and tiles from Italy, Germany, and Canada were analysed. Country information for users who used the models locally was not recorded.

2.2 ZooScan image processing service

Description	ZooProcess is the image analytics pipeline for plankton images collected with the ZooScan instrument. The ZooScan is a commercial instrument, >150 units of which have been sold worldwide. It takes images of live or preserved zooplankton samples, crops and measurements and sends its data to EcoTaxa. 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
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	expertise. A significant time in the processing of ZooScan images is the manual separation of objects touching each other. Another is the correction of non-standard conformant metadata. Through iImagine, ZooProcess advanced through an improved interface and AI tools for segmentation, ported to the iImagine framework.
Task	T5.2
URL	https://www.imagine-ai.eu/service/zooprocess-service
Service Category	Thematic
Service Catalogue	Image Analysis Services for Aquatic Sciences
Location	Currently: EGI + Villefranche-sur-mer, France, Ultimately: EGI + Distributed on the computers of ZooScan users
Modality of access	AI model and processing methodology available on the iImagine Marketplace. Dedicated ZooProcess software (with GUI) available from the website of the Plankton Imagery Platform of Villefranche-sur-mer.
Support offered	Training of users, assistance for data formatting for upload, assistance for data exploitation
Operational since	2010 for the initial version of ZooProcess; continuously improved since 10/2024 for the AI services from iImagine 08/2025 for the private beta of the new ZooProcess with a web UI calling the AI services
User definition	Scientific research groups (mostly used by technicians) + environment monitoring companies/agencies

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2.2.1 Metrics

Metric name	Baseline	Define how measurement is done	M13-M24	M25-M36	TOTAL
Number of unique zooscan+zooproce ss 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	9	9
Number of scans (i.e. images) processed per year	~10000 / y	1 scan per working day, 150 zooscans => 10k scans	0	1,150	1,150
Number of countries in which the current version of zooprocess is used	30	Number of countries in which a zooscan has been purchased	0	1	1
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	France	France

2.2.2 Assessment

To give more details on the software and services: the ZooProcess v10 accelerates the processing of images of plankton samples produced by the ZooScan instrument through the combined use of classical image segmentation and measurement methods with automated classification and panoptic segmentation by neural network models. This artificial intelligence approach allows the automatic separation of objects touching each other in the original image, to enable their exploitation in the future. The AI model and

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processing methodology are available on the iImagine Marketplace. The service utilises the OSCAR instance operated by iImagine as an inference service to invoke the model from ZooProcess, transparently for the user. The dataset was published on the SeaNoe platform, with a metadata record in Zenodo. The Deliverable D1.4 – Final Data Management Plan – gives more details about the publishing of training data sets as part of the iImagine project.

Usage during the production period:

The explanation for the low usage numbers compared to the targets set at the beginning of the project is the same for all criteria (users, images, and countries): the current version of ZooProcess is a GUI application used by technicians with limited computer skills; we planned on replacing ZooProcess with a completely new version but could not finish its GUI in time; as a consequence usage has been limited to a few technical users who could use the AI services through their API. The GUI is still being worked on and a private beta has been deployed during the last month of the project.

A second explanation is that the service was deployed as an OSCAR exposed service on one computing infrastructure involved in iImagine. This made it very easy for the aforementioned technical users to use: they did not have to set anything up. However, in that mode, the service's API (DEEPaaS API) is exposed outside of the Kubernetes clusters. Therefore, users interact directly with the DEEPaaS API and OSCAR does not "see" those requests (but still manages the automated deployment of additional containers, if required depending on the load). As a consequence, no usage tracking was available in this mode.

Remark: In the other use cases that made use of OSCAR, their services were executed via "synchronous" or "asynchronous" invocations in OSCAR. This means that the OSCAR API is aware of these requests and metrics are gathered. These metrics are reflected in the iImagine Grafana Dashboard.

The current statistics therefore show our internal usage, which is the only one we were able to track reliably, although we know that some people used our tools in their lab (because we received questions). It consists in the reprocessing of one of the longest planktonic time series in the world (bimonthly from 1966). The whole series was actually reprocessed two times but the numbers only correspond to one processing, to be fairer.

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Furthermore, the dataset underlying the training of AI models was consulted ~250 times and downloaded 43 times, by people other than us. The time series data has only been published recently, through OBIS and GBIF, and we do not have download statistics yet.

2.3 Marine ecosystem monitoring service

Description	This service is 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	https://www.imagine-ai.eu/case-study/ecosystem-monitoring-at-emso-sites-by-video-imagery
Service Category	Thematic
Service Catalogue	Image Analysis Services for Aquatic Sciences
Providers	UPC, IFREMER, MI,
Location	Vilanova i la Geltru coast (Barcelona, Spain) Lat. : 41° 10,93' N – Long. : 001° 45,15' E ; Lucky Strike (Azores) Lat. : 37° 17,60' N – Long.: 032° 16,40' W; Smartbay Observatory (Spiddal, Galway) Lat. : 53° 13,38' N – Long. : 09° 15,58' W
Modality of access	AI model and processing methodology available on the iMagine Marketplace.
Support offered	support and training
Operational since	September 2024
User definition	Researchers, monitoring agencies, NGOs, environmental management organisations.

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2.3.1 EMSO-Azores metrics

Metric name	Baseline	Define how measurement is done	M13-M24	M25-M36	TOTAL
Number of user groups / institutions accessing EMSO-Azores 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	6	6
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	N/A	N/A	N/A
Number of countries of users	3	Account management of registered users and image processing runs by iMagine platform	0	6	6
Names of countries reached	France, Italy, etc	Account management of registered users and image processing runs by iMagine platform	0	France, Germany, Italy, Poland, Netherlands, United States	

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2.3.2 EMSO-SmartBay metrics

Metric name	Baseline	Define how measurement is done	M13-M24	M25-M36	TOTAL
Number of user groups / institutions accessing EMSO-Smartbay 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	2	2
Number of (Annotated) images generated and archived per year on the data bank	3000	Number of images Annotated for training datasets used by the Model Services	0	10,836	10,836
Number of images processed per year (by iMagine platform services)	0	Number of images processed per year by iMagine platform services are not available for modules deployed from the iMagine dashboard (Currently very small numbers of images have been processed by the initial users of the platform "guestimate" <100)	0	Not Available	Not Available
Number of countries of users	3	Account management of registered users and image processing runs by iMagine platform	0	1	1
Names of countries reached	France, Italy, etc	Account management of registered users and image processing runs by iMagine platform	0	Ireland	Ireland

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2.3.3 EMSO-Obsea metrics

Metric name	Baseline	Define how measurement is done	M13-M24	M25-M36	TOTAL
Number of user groups / institutions accessing OBSEA data (real time or data bank or images and multiparametric data)	10	Number of dataset downloads (images with AI-based detections)	0	70	700
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	1.3M	1.3 M
Number of countries of users	3	Account management of registered users and image processing runs by iMagine platform	0	N/A	N/A
Names of countries reached	France, Italy, etc	Account management of registered users and image processing runs by iMagine platform	0	Not Available as users are downloading from Zenodo	Not Available as users are downloading from Zenode

2.3.4 Assessment

UC3a – Azores:

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The Deep Sea Detection module was developed to provide an AI service for the automatic processing of images collected at the EMSO Azores underwater observatory, supporting the identification and analysis of fauna and habitats for ecosystem monitoring. It has been built on the DeepSeaSpy project, where citizen scientists annotated images of deep-sea habitats, and these annotations were used to train a YOLOv8 deep learning model. The module gives access to a pre-trained model, based on the DeepSeaSpy dataset, and to the possibility of adapting the workflow to other citizen science datasets. The dataset and trained models are openly shared on SeaNoe and Zenodo, while the module itself has been deployed on the iImagine marketplace for direct use. The Deliverable D1.4 – Final Data Management Plan – gives more details about the publishing of training data sets as part of the iImagine project. Comprehensive documentation is also provided in the GitHub repository to guide users in running and adapting the pipeline.

Usage during the production period:

Number of unique users of the AI image processing service:

From M13 to M24, the Deep Sea Detection service was still in preparation, and no usage was reported. Between M25 and M36, activity became visible mainly through dataset and code access. The indicators collected for this period include 74 dataset downloads, 1 dataset reuse (with no citation found at this stage), 2 institutional users (not using the iImagine platform) and around 6 GitHub cloners.

Number of images processed per year:

The number of processed images could not be reported, as activity was measured through dataset access and Github repository usage rather than platform statistics.

Number of countries:

In terms of geographical reach, dataset downloads between M25 and M36 came from six countries—France, Germany, Italy, Poland, the Netherlands, and the United States—since country information is only available from dataset download metrics through SEANOE.

Overall, the project shows emerging use through dataset downloads, a first reuse, institutional users outside the iImagine platform, and activity on GitHub, while the operational module on iImagine has not yet attracted users but may do so in the future. These figures are based on multiple sources, including Seanoe and Zenodo downloads, institutional user logs, GitHub traffic, and Google Scholar

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citations. A monitoring process will also be established to track future citations of dataset DOIs in scientific publications, providing further evidence of impact.

UC3s – Smartbay:

EMSO Smartbay developed and deployed 3 AI Computer Services on the iImagine platform [Smartbay Species Detection](#), [Smartbay Marine Types](#) for usage on Smartbay underwater imagery and video and [Smartbay prawn Burrow detection](#) for prawn burrow detection in underwater towed camera imagery and video for use in assisting Prawn Fishery surveys. The services use YOLOv8 models. Smartbay also briefly investigated a Video Quality Assessment model (DOVER VQA), for scoring video quality, but staffing resource and time issues prevented the further investigation and development of an AI service based on the model.

EMSO-Smartbay relied on Summer Bursar students in 2024 and 2025 to annotate images for the creation of Nephrop(Prawn) Burrow, Marine Species and Marine Types Training Datasets. Datasets were annotated in an on-premise [CVAT](#) Instance and model training was mainly carried out in the Marine Institute using an on-premise GPU and Jupyter notebook environment to develop in-house capabilities. The [MLFlow](#) Instance on the iImagine platform was used in a number of training runs for gathering model training metrics.

It is intended to also deploy the models in on-premise, container infrastructure for use on the smartbay video Multi-year archive (Continuously recorded 2-minute video files) to identify interesting video footage in the archive and also species detection on real time video feeds. The Nephrops burrow detection model will be trialled further on Nephrops Fisheries surveys. The developed models have been used in-house to test semi-automatic annotation of imagery in CVAT.

The outputs and workflows developed in the iImagine project have generated further interest with work continuing on enhancing the Nephrop burrow training dataset and the detection model and also working further on tracking and counting burrows in Survey Imagery. The Marine Types and Species training datasets will hopefully continue to be added to and further work has begun on crab species training datasets for work in crab fishery surveys, these annotations will be also used to further enhance the smartbay species detection models. The Deliverable D1.4 – Final Data Management Plan – gives more details about the publishing of training data sets as part of the iImagine project.

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Usage during the production period:

Number of unique users of the AI image processing service:

- For EMSO-Smartbay(Marine Institute) currently 2 groups of users in the Marine Institute have used the AI services deployed on the iImagine Platform (Marine Institute Smartbay Team and Marine Institute Nephrops survey team).
- EMSO Smartbay saw a total of 116 Training dataset downloads from Zenodo to September 2025 (55 Smartbay Marine Species Training dataset, 45 Smartbay Marine Types Training dataset, 16 Smartbay Nephrops Burrow training dataset downloads). Apart from the numbers of downloads, Zenodo does not provide further download user metrics (e.g. Country of download etc.)
- EMSO Smartbay saw a total of 118 Docker Hub container Downloads, to September 2025, (These would be the Smartbay iImagine service container images on Docker Hub)

Number of images processed per year:

- For EMSO-Smartbay(Marine Institute) over 10,000 images were annotated and incorporated into the Training datasets, used for the Models and services.
- EMSO-Smartbay deployed 3 Object detection services on the iImagine platform, the number of images/video submitted to the service modules deployed from the iImagine dashboard are not currently tracked by the deployed modules or the iImagine platform (this metric would require logging HTTP API calls submitting images to the iImagine services images either by the platform or modules themselves).
- For EMSO-Smartbay a small number of images have been submitted to the deployed services on the iImagine platform by the initial internal Smartbay and Marine Institute users of the model Services.
- For EMSO-Smartbay the Nephrop Burrow Model has also been used onsite (in the Marine Institute) to test detection and assist in the semi-automatic annotation of new Prawn Survey imagery and will be used to help speed up training dataset additions in an in-house instance of CVAT.

Number of countries:

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- For EMSO-Smartbay (Marine Institute) 1 country (Ireland) has used the Smartbay Services on the Imagine Platform. The Model services have been used internally by Smartbay staff and Marine Institute Nephrops fisheries staff
- For EMSO-Smartbay further development and improvement of the initial Models is expected to increase interest in the models and Training datasets for Countries bordering the North East Atlantic Ocean.

UC3o – OBSEA:

The OBSEA is an underwater observatory. Over the years different cameras have been deployed, having a vast archival of pictures starting from 2011. AI techniques are used to automate the detection and classification of the fish specimens captured by the cameras at OBSEA and provide a timeseries of fish detections. This data can be easily processed by scientists who can spend their time doing actual science instead of counting fish picture by picture. Standards have been developed for managing and storing video imagery, and annotated images have been developed. The workflow has been set up in the iMagine AI Platform using artificial intelligence to preselect interesting images and analyse selected images for the identification of biota. Documentation and guidance about standard data management practices and the use of AI analysis pipelines for biota classification have also been developed. The Deliverable D1.4 – Final Data Management Plan – gives more details about the publishing of training data sets as part of the iMagine project.

Usage during the production period:

Number of unique users of the AI image processing service:

In the EMSO-Obsea use case the images were pre-processed, so final users are only accessing scientific datasets published at Zenodo.

Number of images processed per year:

In EMSO-Obsea use case, during the project lifetime a total of 1.3 million pictures were produced and analyzed. Thus a mean of 433k pics / year were processed.

Number of countries:

Zenodo (main dataset delivery platform) does not provide geographic information on users / data downloads.

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2.4 Oil spill detection service

Description	WITOIL (Where Is the Oil) was developed to support emergency management during oil spill accidents. As a Digital Twin system, it combines near real-time input data from environmental models, simulation, and analysis, providing tools to predict and manage complex scenarios effectively. Through WITOIL-for-iMagine, the service leveraged the DEEPaaS API and the Medslik-II model to simulate the transport and weathering of actual or hypothetical oil slicks. The use of Bayesian optimization further enhanced Medslik-II's predictive accuracy as a test case based on the satellite imagery provided by OrbitalEOS and pushed into Zenodo by University of Trento. Witoil for iMagine relies on ECMWF (ERA5 reanalysis) wind fields and CMEMS ocean currents and sea surface temperature to reproduce spill dispersion, while users specify spill parameters. The resulting outputs include spatial-temporal distributions of oil concentration on the sea surface.
Task	T5.4
URL	https://www.imagine-ai.eu/service/witoil-service
Service Category	Thematic
Service Catalogue	Image Analysis Services for Aquatic Sciences
Providers	CMCC, University of Trento, OrbitalEOS
Location	Via Marco Biagi, 5, 73100 Lecce LE (Italy)
Modality of access	AI model and processing methodology available on the iMagine Marketplace.
Support offered	Support of users and simulations, including training of users
Operational since	October 2024
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	M13–M24	M25–M36	TOTAL
Number of unique users of the AI image processing service	100	Account management of registered users and image processing runs by iImagine platform	0	80	80
Number of images processed per year	1000	Account management of registered users and image processing runs by iImagine platform	0	172	172
Number of images ingested	200	Account management of registered users and image processing runs by iImagine platform	0	172	172
Number of countries of users	10	Account management of registered users and image processing runs by iImagine platform	0	N/A – User location is not tracked in the iImagine platform	NA
Names of countries reached	France, Italy, etc	Account management of registered users and image processing runs by iImagine platform	0	N/A	NA

2.4.2 Assessment

WITOIL (Where Is the Oil) is a multi-model Decision Support System (DSS) on-demand service that forecasts transport and weathering of actual or hypothetical oil spills in the global, regional European Seas, and in the selected coastal areas. WITOIL uses the MEDSLIK-II oil spill model forced by operational meteo-oceanographic services. The service has been further refined by using labelled

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image datasets from Sentinel 1, Sentinel 2 and Landsat 8 satellites to improve existing deep-learning algorithms and the AI-supported detection of oil spills. WITOIL is now an operational service in the iMagine-AI platform and interfaces with existing operational marine pollution oil spill monitoring and modelling services running at CMCC. Relevant guidelines and documentation are also available to promote the service uptake. The system is accessible through a simple user interface (either through Swagger API or GradIO) all within the iMagine marketplace, so a less experienced user can perform simulations on their own without the need for extensive computing skills. The Deliverable D1.4 – Final Data Management Plan – gives more details about the publishing of training data sets as part of the iMagine project.

Usage during the production period:

Number of unique users of the AI image processing service

There were 9 Git clones in the last 14 days in the Git repository. There were 6 unique visitors and a total of 17 views in the Git repository over the last 14 days. These numbers represent only a small percentage of the total number of visits and clones, however that is the limit github allows us to see past activity.

Number of images processed per year:

There were a total of 49 downloads and 211 views of the dataset 'iMAGINE UC4 – Segmented Oil Spills', as available in the Zenodo database.

Number of countries:

The sources available for measuring traffic metrics do not dispose of country tracking.

2.5 Flowcam phytoplankton identification

Description	This service supports 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
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	supported plankton identification. Enabling access 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	https://www.imagine-ai.eu/service/phytoplankton-identification-service
Service Category	Thematic
Service Catalogue	Image Analysis Services for Aquatic Sciences
Location	Original service at VLIZ – Belgium
Modality of access	AI model and processing methodology available on the iMagine Marketplace.
Support offered	Support of users and operation, including training of users
Operational since	July 2024
User definition	Single researchers, environmental management organisations

2.5.1 Metrics

Metric name	Baseline	Define how measurement is done	M13-M24	M25-M36	TOTAL
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	7	122	129
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	2,075,958	185,412	2,261,370
Number of images	1,400,00	Account management of registered users and image processing	2,075,958	185,412	2,261,370

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ingested	0	runs by iMagine platform + internal and affiliated user count			
Number of countries of users	1	Account management of registered users and image processing runs by iMagine platform	7	3	10
Names of countries reached	Belgium, France, Spain etc	Account management of registered users and image processing runs by iMagine platform	France, Italy, Belgium, Germany, Spain, The Netherlands and Ireland	Taiwan, the United States, and Greenland	France, Italy, Belgium, Germany, Spain, The Netherlands, Ireland, Taiwan, the United States, and Greenland,

2.5.2 Assessment

The Flowcam phytoplankton identification service leverages a deep learning image recognition algorithm based on a Convolutional Neural Network (CNN) to analyze FlowCam image data stored in the institute's internal MongoDB database for phytoplankton taxonomy. The output data adheres to FAIR principles, following Darwin Core standards and relevant vocabularies, ensuring interoperability, accessibility, and long-term usability. The service is hosted on the iMagine-AI platform, which provides a fully operational environment for processing images, storing output data, and supplying guidance and documentation to users. High-quality phytoplankton image datasets accumulated over more than four years are available for research, analysis, and further model development. Users can employ the service to determine the taxonomic composition of phytoplankton samples. The platform supports reuse of pre-trained models or fine-tuning on new models for taxonomic identification. The Deliverable D1.4 – Final Data Management Plan – gives more details about the publishing of training data sets as part of the iMagine project.

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The service is deployed through a combination of methods to meet diverse user needs: the Marketplace Inference Service performs automated inference on submitted images; the OSCAR Inference Service provides an intuitive interface for performing inference while tracking usage metrics; and the Train Your Own CNN option allows users to train custom models on their own datasets using the platform's infrastructure. Overall, this deployment enables efficient, scalable, and traceable AI-based analysis of FlowCam phytoplankton images, supporting both operational monitoring and broader research applications across multiple institutions and countries.

Usage during the production period:

Number of unique users of the AI image processing service:

- At the start of the reporting period, the Flowcam phytoplankton identification service had a baseline of five registered users, composed of internal staff and affiliated researchers. Initial usage supported ongoing projects such as LifeWatch and Jerico-Next/S3, with only a small number of users actively submitting images.
- During months 6–12, usage grew slightly as the service supported two internal and two affiliated users. By months 13–24 (M13–M24), the number of unique users increased to seven, reflecting additional internal and affiliated personnel as well as a high school teacher testing the OSCAR inference system.
- The period between months 25–36 (M25–M36) saw a substantial surge, with 122 new users joining. This growth was driven by new access requests via iMagine Services, international collaborators at the Leibniz Institute of Freshwater Research and the Greenland Institute of Natural Resources, and technical workshops using dummy annotated datasets. By the end of the reporting period, the total number of unique users reached 129, highlighting the scalability and adoption of the service across research, educational, and international contexts.

Number of images processed per year:

- At baseline, the service processed approximately 300,000 images per year. During the monitoring period, image processing volumes increased dramatically due to both internal operations and external users leveraging the platform.

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- In months 13–24 (M13–M24), a total of 2,075,958 images were processed. This figure includes images processed for ongoing monitoring projects as well as contributions from PhD students. In months 25–36 (M25–M36), an additional 185,412 images were processed, bringing the cumulative total to 2,261,370 images.

Number of countries:

- Initially, the service was used by researchers at the kick-off workshop (7): France, Italy, Belgium, Germany, Spain, The Netherlands and Ireland. Over time, the geographic reach expanded through workshops, international collaborations, and institutional access requests.
- In months 25–36, three additional countries gained access, including Taiwan, the United States, and Greenland, resulting in a total of **10 countries** represented.

3 Conclusion

The document provides the final periodical assessment of imaging VA services of the iImagine project. Five mature use cases deployed their production AI-based services on the iImagine platform and offered them to the respective users. The relevant datasets, source code, and pre-built applications are also shared through open repositories (primarily Zenodo) and the iImagine marketplace. The use cases acquired new users from various countries and aim to further promote their AI-based imaging services.

Usage statistics highlight diverse level of engagement across the 5 services:

1. The Marine litter assessment service recorded 26 users across 3 countries who processed 95 images.
2. The ZooScan service had 9 users processing 1,150 scans.
3. The Marine ecosystem monitoring service showed diverse uptake: EMSO–Obsea processed 1.3 million images, EMSO–SmartBay annotated over 10,000, and EMSO–Azores supported 6 user groups across 6 countries.
4. The Oil spill detection service supported 80 users who processed 172 images.
5. The Flowcam phytoplankton identification service served 129 unique users and processed 2.26 million images, expanding to 10 countries, driven by international collaborations and workshops.