

---

## EGI Call for use cases

### Survey response 1

Response ID	106
Date submitted	1980-01-01 00:00:00
Last page	1
Start language	en
Seed	156380311

## EGI Call for use cases

Title of the use case	C-WASTE: Construction Waste Analysis using Segmenting Technology & Efficiency
Principal investigator [Full Name (in English) ][]	Antonis Venianakis
Principal investigator [Position][]	Technical Operations Manager
Principal investigator [Affiliation][]	VERTLINER
Principal investigator [Email address][]	avenianakis@vertliner.com
Additional contact (optional) [Full Name (in English)][]	George Papadopoulos
Additional contact (optional) [Position][]	AI Engineer
Additional contact (optional) [Affiliation][]	VERTLINER
Additional contact (optional) [Email address][]	gpapadopoulos@vertliner.com
Objectives of the use case (scientific and computing objectives separately)	<p>We intend to train and validate several Deep Neural Networks with different architectures in order to examine their accuracy and efficiency in detecting and segmenting objects of interest in images. The ultimate goal is to obtain a robust model for the purpose of construction waste management.</p> <p>Concerning the computing objectives, we aim for access to infrastructures capable of supporting Neural Networks training in massive datasets. Specifically, we require ready-to-use NVIDIA GPUs with CUDA support, a high number of CPU cores, as well as RAM and storage with high capacity. It is critical to have access to the infrastructure at any time through a convenient way, such as an SSH connection.</p>

Beneficiaries\* of the use case and expected impact, (incl. contribution to Open Access and FAIR) and estimated number of users of the setup. \*Who will use or benefit from the envisaged compute setup? A specific team, or a broader group of users? Researchers, policy makers? From which countries and institutes? - Please characterise and estimate the number of these beneficiaries.

The primary beneficiary of this use case will be our startup company called VERTLINER, as the insights and advancements from this project will directly enrich our future offerings, particularly in the realm of construction waste management. By integrating cutting-edge image processing techniques into our products, we can offer more efficient and innovative solutions to potential clients. This project is expected to benefit stakeholders of specific industries with high-intensity human tasks, including construction companies, by providing them with more sophisticated tools and data-driven insights. The ripple effect of these improvements will be felt across the industry, leading to more sustainable and efficient waste management practices.

Description of the technical environment that is already used (institutional cluster, grid, cloud computing, HPC, data storage, data repositories, data management systems, data discovery services, etc...)

Currently, the environment used is a cloud computing platform operating within a docker container. The resources provided are the following:

- CPU cores: 10
- RAM: 25 GB
- Storage: 10 GB
- GPU: 1 NVIDIA TESLA V100-PCIE-32GB

Description of the requested EGI services, technical support and training required with as many details as possible - topics, functionalities, capacity (number of nodes, CPU, RAM, storage), location, etc...

We request EGI's 'Cloud Compute' or 'Cloud Container Compute' services, tailored to our project's needs. Our key requirements are the following:

- Root privileges
- Command line access
- Public IP address
- CPU cores:  $\geq 64$
- RAM:  $\geq 128$  GB
- GPU TFLOPs:  $\geq 312$  (FP32)
- GPU memory:  $\geq 80$  GB
- Storage:  $\geq 3$  TB

Alongside this, we require focused technical support and training to effectively utilize these resources, covering basic operation, optimization, and troubleshooting.

Scientific applications, platforms and datasets to be used in the context of the use case

For our neural networks training and evaluation, we will use the 'Pytorch' Python library, known for its deep learning capabilities. Our datasets, self-collected and annotated by our team, are tailored to fit the specific requirements of our neural network models.

Expected timeline for implementation and use of the EGI services

Our expected timeline for the implementation and use of EGI services spans three months, encompassing initial setup, integration with our systems, testing phases, and full deployment for project use.

Additional requirements and comments

At this stage, there are no further comments or specific additional requirements beyond those previously outlined. We believe the detailed specifications provided above comprehensively cover the scope of our needs for the EGI services. We look forward to a successful implementation and collaboration.

Relevant websites and/or social media channels

<https://www.vertliner.com>