AI4PHENO
AWARENESS BLOOMING

Project Deliverables Verification Document (AI4Pheno)

Version 1.0.0

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Poznań University of Life Sciences
September 14, 2023

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1 About project

This document, *"Project Deliverables Verification Document (AI4Pheno)"*, serves as confirmation that the tender has been executed in accordance with the specification attached to the tender found at https://www.egi.eu/tender-eosc-dih-2023.

The specifications to which this document refers can be found at the following links:

- EGI-2023-001 - Annex 8.1 - Technical offer part I
- EGI-2023-001 - Annex 8.2 - Technical offer part II

1.1 Web Application Access

The web application is available and can be accessed at the following URL: `https://ai4pheno.seth.software`.

1.2 Problem Definition

The heart of the problem lies in the domain of *Phenology* - a discipline studying vegetation's temporal changes. Traditionally, it targets seasonal events such as budding, fruiting, flowering, and ageing. Due to the influence of both environmental factors and human activities on plant developmental stages, this science yields invaluable insights into the state of our landscape's vegetation cover. Such data proves pivotal especially in the context of climate change, where progressive shifts challenge the health and occurrence of plant species.

While various methods exist to detect phenological stages, there remains a void in the market for open tools aiding in the collection and analysis of digital phenological imagery using machine learning (ML) techniques. The proposed tool intends to fill this gap by offering an automated, efficient means to apply ML in time series image analyses of vegetation impacted by climate changes.

1.3 User Benefits

Upon the provision of this service, users will be endowed with a comprehensive IT solution. This integrated platform will not only streamline the processes of image acquisition, storage, and analysis but also offer scalability

to accommodate further research areas like landscape analysis or crop yield forecasting.

1.4 Objectives

The overarching aim is to co-develop this solution with the EOSC DIH and the Research Community, ensuring its accessibility via the EOSC Marketplace. By procuring these solutions from the private sector, EOSC DIH aims to meet the research community's needs while also enriching the EOSC with novel offerings.

Specific objectives encompass:

1. Acquisition of a digital platform for phenological imagery.
2. Provision of digital tools for manual and automatic image analysis.
3. Introduction of digital tools to utilize hand crafted AI models for phenological imagery analysis.
4. Development of AI models for automatic ROI detection.
5. Facilitation of management tools for the platform concerning data and users.

2 Compliance with Software Requirements

2.1 Functional requirements

Table 1: Functional requirements

ID	Type	Description according to technical specifications
GFR_1	System	
GFR_2	System	
GFR_3	System	
GFR_4	System	
GFR_5	Users	
GFR_6	Users	
GFR_7	Admin	
SFR_DAS_1	Camera data	
SFR_DAS_2	Camera data	

Continued on the next page

Table 1 Functional requirements –Continued on the next page

ID	Type	Description according to technical specifications
SFR_DAS_3	Camera data	
SFR_DAS_4	Input data	
SFR_DAS_5	Camera data	
SFR_DAS_6	Camera data	
SFR_DAS_7	Camera auxiliary data	
SFR_DAS_8	Camera auxiliary data	
SFR_DAS_9	Third-party data sources	
SFR_DAS_10	Image data	
SFR_DAS_11	Image data	
SFR_DAS_12	Image data	
SFR_DA_1	ROI definition	
SFR_DA_2	ROI definition	
SFR_DA_3	ROI definition	
SFR_DA_4	ROI definition	
SFR_DA_5	ROI data	
SFR_DA_6	ROI data	
SFR_DA_7	ROI data averaged	
SFR_DA_8	ROI data averaged fitting	
SFR_DA_9	Image ROI meta data	
SFR_DA_10	Image and ROI data custom	
SFR_AIM_1	Apple AI model	
SFR_AIM_2	Flowering AI model	
SFR_DV_1	Image & ROI	
SFR_DV_2	Image & ROI	
SFR_DV_3	Image & ROI	
SFR_DV_4	ROI data	

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Table 1 Functional requirements –Continued on the next page

ID	Type	Description according to technical specifications
SFR_DV_5	ROI data	
SFR_DV_6	ROI data	
SFR_DV_7	ROI data	
SFR_DV_8	ROI data	
SFR_DV_9	Camera data	
SFR_DV_10	Camera data	
SFR_DV_11	User data	
SFR_DV_12	Admin data	
SFR_DE_1	Image data	
SFR_DE_2	Analysis data	
SFR_DE_3	ROI data	

2.2 Performance requirements

Table 2: Performance requirements

ID	Performance requirements
PR_1	

2.3 Platform and infrastructure requirements

Table 3: Platform and infrastructure requirements

ID	Platform and infrastructure requirements
PIR_1	

2.4 Support and maintenance requirements

Table 4: Support and maintenance requirements

ID	Support and maintenance requirements
SPPM_1	

3 Compliance with Methodology and organization of the work and resource

3.1 Methodology

Table 5: Methodology

Activities or tasks to be carried out	Methodology to be implemented.

3.2 Organization of work and resource

Table 6: Organization of work and resource

Resource	Organization of work	Activities or tasks to be carried out

3.3 Quality control measures

Table 7: Quality co

Concept
Implementation of a quality system
Risk management and continuity of the service in case of absence of the member of the tea
Measures to ensure the performance and maintenance of the software for at least 12 month
Measures to ensure compliance with the data protection regulation.

4 Contact

If you need to get in touch with our team, please use the appropriate email address below based on the nature of your inquiry:

- **Administrative Inquiries:** For questions related to licensing, partnerships, and other administrative matters, please contact ai4pheno-admin@seth.software.

- **General Information:** For general questions or information about our software and its features, reach out to ai4pheno-info@seth.software.
- **Security Issues:** If you have identified a security vulnerability or have concerns about the security of our software, please alert our security team immediately at ai4pheno-security@seth.software.
- **Support:** For technical support, troubleshooting, or reporting bugs, get in touch with our support team at ai4pheno-support@seth.software.

We aim to respond to all inquiries in a timely manner. Thank you for your interest in AI4Pheno.