



# Data Management Plan

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## 1 SAMS Project description

SAMS is a three year project supported by the European Union's Horizon 2020 research and innovation program with a budget of around 1.99 Mio EUR. The project started in January 2018 and is implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH in collaboration with 7 partners from Europe, ASEAN & Sub-Saharan Africa.

The overall objective of SAMS is to strengthen international cooperation of the EU with developing countries in ICT concentrating on the field of sustainable agriculture as a vehicle for rural areas. The SAMS Project aims to develop and refine an open source remote sensing technology and user interaction interface to support small-hold beekeepers on two continents in managing and monitoring the health and level of productivity in their own bee colonies and beehives. Highlighted will be especially the production of bee products and the strengthening of resilience to environmental factors.

SAMS is an appropriate and adapted ICT solution...

- ✓ that allows active monitoring and remote sensing of bee colonies
- ✓ to ensure bee health and bee productivity
- ✓ giving answers to the requirements of beekeeping in developing countries
- ✓ available as an open source technology

## 2 Data Summary

The main purpose of the data collection of this SAMS is to develop an open source remote sensing technology for monitoring the state of the bee colonies. Therefore, it is necessary to collect data about individual bee colonies in Ethiopia, Indonesia and Europe. Data is collected to monitor the colony behaviour, to develop algorithms for bee colony state recognition and it is a basis for a decision support system development.

Within SAMS it is planned to collect bee colony data:

- Temperature data (values in Celsius)
- Weight data (values in grams)
- Audio data (frequencies)

It is planned to use bee colony data collected during previous FP7 project "ITAPIC". Data will be used to make a comparison with newly collected data in other countries that have different climate and environmental conditions. Therefore, such a comparison will give an insight about any significant differences that needs to be taken into account regarding honeybee behaviour monitoring and decision support system. Results, gained by comparison are also a great resource for demonstration purposes and for preparing scientific publications.

The origin of the data is gained from various sensors, which are placed in to the hive (temperature, acoustic) or are placed beneath the hive (scales).



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The expected size of the data is in the first version of the Initial Data Management Plan hard to predict, e.g., raw audio data could be expect in many Tera Byte (TB), but temperature and weight data in several Giga Byte(GB). SAMS will produce several datasets during the lifetime of the project. The data will be both qualitative and quantitative in nature and will be analysed from a range of methodological perspectives for project development and scientific purposes. In addition, data will be useful for internal project use, for beekeepers and for other researchers working in the field of Precision Beekeeping.

## 3 FAIR data

### 3.1 Making data findable, including provisions for metadata

The data generated and / or used in the project is not identifiable by metadata nor is it identifiable and localizable by a standard identification mechanism.

SAMS naming conventions are agree within developers (UNILV and UNIKAS) of data storage system. It is internally agreed.

Search keywords will be provide when the dataset is upload. SAMS data will be stored in closed database. If necessary to have access to raw data, there is the possibility to provide specific interfaces. It is planned to give open access to data summaries and charts.

In SAMS there is no possibility to provide clear version numbers, because we do not have data versions. The reason for these is that each data row were supported by timestamp.

There is no plan to create metadata in SAMS.

### 3.2 Making data openly accessible

All bee colony data produced by sensors within the project will be summarised and accessible online using the developed web system. Raw data will be use internally, but if needed the access to it can be granted by specific interfaces.

To make the data accessible a specific Web system will be developed to access the data summary.

Within the SAMS project, there are no special software or methods needed to access the data. Only web browser is needed to see the data summary and charts. If access to the raw data will be granted (by specific interfaces), no specific software will be needed during the export stage, but a spreadsheet type software may be needed to inspect the exported data. As long as there is no special software needed, no documentation is included.

SAMS data will be stored in database, which is located on the server, which is placed in Latvia University of Life Sciences and Technologies (LLU). The appropriate arrangements with the identified repository were made from the Latvia University of Life Sciences and Technologies. There are no restrictions on use and so a data access committee is not need.

The conditions for data access is not describe. Nevertheless, a Link to the developed system will be published within the community. For these there is no need for person identification within the SAMS project.



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### 3.3 Making data interoperable

SAMS data produced in the project is planned to be interoperable. It is possible to add also data from other sources to the developed system. The data vocabulary and methodologies we follow to make them interoperable is still in progress and could be finalized in Version 2.0 of the Data Management Plan. We will use standard vocabularies for all data types in our data set. If it is unavoidable that we need to use unusual or project-specific ontologies or vocabularies in SAMS, we provide mappings to more commonly used vocabularies.

### 3.4 Increase data re-use (through clarifying licences)

The SAMS data collected within the project will be open for everyone. SAMS data will be made available for re-use from the moment the SAMS web site is published ([www.sams-project.eu](http://www.sams-project.eu)) . Data produced in the project will be available until the web system is operable. At this moment, it is planned that data remains re-usable until the project end date.

In the Version 1.0 of the Initial Data Management Plan the data quality assurance processes is not described.

If Datasets are update, the partner that processes the data has the responsibility to manage the different versions and to make sure that the latest version is available in the case of publically available data.

## 4 Allocation of resources

There are no immediate costs anticipated to make the dataset produced FAIR. Costs for data management and data storage are not defined separately. The costs are included in person months for researchers.

Any Costs are covered from project direct costs. Latvian University of Life Sciences and Technologies will be responsible for data management.

In this stage of the project, the resources for a long term preservation are not discussed.

## 5 Data security

For the duration of the project, Data backups are made automatically by the server. Within the project, there are no sensitive data transfer. In this stage of the project, there is no certified repositories for long term preservation and curation.

## 6 Ethical aspects

No ethical or legal issues that can have impact on data sharing in the moment.

The SAMS project does not involve the use of human participants or personal data in the research of the bee colony data and therefore there is no requirement for ethical review.



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HISTORY OF CHANGES		
Version	Publication date	Change
1.0	30.06.2018	▪ Initial version



**Project website:** [www.sams-project.eu](http://www.sams-project.eu)

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