



International Partnership on Innovation

SAMS - Smart Apiculture Management Services

Deliverable N°1.9

Initial Data Management Plan

N°1.9 & WP1 Project Management and Coordination

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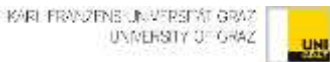

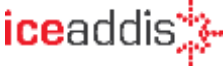





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Author(s)	A. Zur (GIZ GmbH), A. Zacepins(UNILV), S. Kirchner (UNIKAS), A. Pratomo (CV.Primary)
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SAMS consortium partners

Logo	Partner name	Short	Country
	Deutsche Gesellschaft für internationale Zusammen-arbeit (GIZ) GmbH (Coordinator)	GIZ	Germany
	University of Kassel	UNIKAS	Germany
	University of Graz (Institute for Biology)	UNIGRA	Austria
	Latvia University of Life Sciences and Technologies	UNILV	Latvia
	ICEADDIS – IT-Consultancy PLC	ICEADDIS	Ethiopia
	Oromia Agricultural Research Institute, Holeta Bee Research Center	HOLETA	Ethiopia
	University Padjadjaran	UNPAD	Indonesia
	Commanditaire Vennootschap (CV.) Primary Indonesia	CV.PI	Indonesia

List of Abbreviations

DSS	Decision Support System
GB	Giga Byte
EU	European Union
ICT	Information and communication technology
IDMP	Initial Data Management Plan
ORDP	Open Research Data Pilot
SAMS	Smart Apiculture Management Services
SDG	Sustainable Development Goals
TB	Terra Byte
UCD	User Centered Design

Summary of the project

SAMS is a service offer for beekeepers that allows active monitoring and remote sensing of bee colonies by an appropriate and adapted ICT solution. This system supports the beekeeper in ensuring bee health and bee productivity, since bees play a key role in the preservation of our ecosystem, the global fight against hunger and in ensuring our existence. The high potentials to foster sustainable development in different sectors of the partner regions are they are often used inefficient.

Three continents - three scenarios

(1) In Europe, consumption and trading of honey products are increasing whereas the production is stagnating. Beside honey production, pollination services are less developed. Nevertheless, within the EU 35% of human food consumption depend directly or indirectly on pollination activities.

(2) In Ethiopia, beekeepers have a limited access to modern beehive equipment and bee management systems. Due to these constraints, the apicultural sector is far behind his potential.

(3) The apiculture sector in Indonesia is developing slowly and beekeeping is not a priority in the governmental program. These aspects lead to a low beekeeper rate, a low rate of professional processing of bee products, support and marketing and a lack of professional interconnection with bee products processing companies.

Based on the User Centered Design the core activities of SAMS include the development of marketable SAMS Business Services, the adaption of a hive monitoring system for local needs and usability as well as the adaption of a Decision Support System (DSS) based on an open source system. As a key factor of success SAMS uses a multi stakeholder approach on an international and national level to foster the involvement and active participation of beekeepers and all relevant stakeholders along the whole value chain of bees.

The aim of SAMS is to:

- enhance international cooperation of ICT and sustainable agriculture between EU and developing countries in pursuit of the EU commitment to the UN Sustainable Development Goal (SDG N°2) “End hunger, achieve food security and improved nutrition and promote sustainable agriculture”
- increases production of bee products
- creates jobs (particularly youths/ women)
- triggers investments and establishes knowledge exchange through networks..

Project objectives

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 in managing and

monitoring the health and productivity in their own bee colonies. Highlighted will be especially the production of bee products and the strengthening of resilience to environmental factors.

- Specific objectives to achieve the aim:
- Addressing requirements of communities and stakeholder
- Adapted monitoring and support technology
- Bee related partnership and cooperation
- International and interregional knowledge and technology transfer
- Training and behavioural response
- Implementation SAMS Business cooperation

Contents

SAMS consortium partners.....	2
Summary of the project	4
Project objectives	4
Contents.....	6
1. Initial Data Management Plan	7
2. Data Summary	8
3. Fair Data.....	9
3.1 Making data findable, including provisions for metadata.....	9
3.2 Making data openly accessible.....	9
3.3 Making data interoperable	10
3.4 Increase data re-use (through clarifying licences)	10
4. Allocation of resources.....	11
5. Data security.....	11
6. Ethical aspects	11

1. Initial Data Management Plan

The use of a Data Management Plan is required for projects participating in the Open Research Data Pilot (ORDP). A Data Management Plan should be developed in the first 6 months of a project and updated - if appropriate - during the project lifetime (in the form of deliverables). As a minimum, a DMP should be evaluated as part of the mid-term and/or final project reviews for projects.¹ It should describe the data management life cycle for the data to be collected, processed and/or generated by the SAMS Horizon 2020 project. The Data Management Plan is a key element of data collection and exchange.

More specifically, the DMP shall be generated based on the EU Commission guidelines regarding the management of data requirements. According to these guidelines, the data that is going to be shared for scientific, and commercial purposes should be easily discoverable and accessible. As part of the SAMS project, this deliverable provides the SAMS data management plan Version 1. An update will take place during the project and will be completed in month 36, with the Data Management Plan Version 2.

¹ Source: "Guidelines on Data Management in Horizon 2020", Version 2.1, published 15 February 2016

2. Data Summary

The main purpose of the data collection of 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 and whole apiaries in Ethiopia, Indonesia and Europe. Research data is collected to monitor the colony behaviour, to develop various algorithms for bee colony state identification 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)
- Humidity (values in percent's)
- Weight data (values in grams)
- Audio data (frequencies)

It is also planned to use bee colony data collected during previous FP7 project "ITAPIC". Bee colony 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, humidity, acoustic) or are placed beneath the hive (scales).

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 expected in many Terra Byte (TB), but temperature, humidity 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 agreed within developers (UNILV and UNIKAS) of data storage system. It is internally agreed.

Search keywords will be provided when the dataset is uploaded. SAMS data will be stored in a 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 this is that each data row was supported by a 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 summarized and accessible online using the developed web system. Raw data will be used internally, but if needed, 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 a 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 a database, which is located on the server, which is physically 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 needed.

The conditions for data access are not described. 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.

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 dataset. 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). 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

There are no ethical or legal issues that can have impact on data sharing in the moment.

As we are practicing User Centered Design (UCD) process in the early phase of the research, we collected some form of personal data through user interviews. However, these data are kept as anonymous and we do not store names, address as well as other personal data, because our concern is on user behavior and motivation. These data will then be synthesized into fictional user persona that bear no resemblance in actual user name, age, sex and other segment. We mainly only process user behavior.

Some picture of actual person might be kept for the purpose of documentation of user research process.

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.

Project website: www.sams-project.eu

Project Coordinator contact:

Angela Zur
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
An der Alster 62,
20999 Hamburg, Germany
Angela.Zur@giz.de

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