

SAMS- NEWSLETTER

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@SAMS_EU_H2020

PROJECT ACTIVITIES

FREE READING MATERIAL IN TIMES OF THE CORONA VIRUS

COST-REDUCTION OF SAMS HARDWARE AND NEW EQUIPMENT FOR ET AND ID

ALTERNATIVE SAMS SYSTEMS DEVELOPED

DSS SOFTWARE PROTOTYPING ON A GOOD WAY

DATA WAREHOUSE IS RUNNING

SUCCESSFUL 6TH STEERING COMMITTEE MEETING IN LATVIA

CB ACTIVITIES IN ETHIOPIA

NEW ARTICLES PUBLISHED

CONTENT OF SAMSWIKI AVAILABLE IN OTHER LANGUAGES

NEW PARTNER BEEKEEPERS FOUND IN INDONESIA

RESULTS OF THE MARKET RESEARCH SURVEY AVAILABLE

BUSINESS DEVELOPMENT IN PROGRESS

UPCOMING EVENTS

MONTHLY DISSEMINATION, BANDUNG

DEAR SAMS COMMUNITY,



Smart
Apiculture
Management
Services

We would like to inform you with this quarterly update about news and upcoming events on our project activities.

Project activities from Dec. 2019 to March 2020

SAMS AND THE GLOBAL COVID-19 CRISIS

The new corona virus hit the whole world, but we do everything in our power to go on with the daily SAMS-business. For our readers, there is also no need to get bored during your time at home - we offer you some interesting SAMS-related reading material.



Visit our [Twitter account](#) to stay updated all the time.

Data Warehouse: UNILV developed a [basic instruction](#) on how to connect any bee monitoring hardware to the SAMS Data Warehouse.



Hardware: Want some information on the second SAMS – prototype hive? The [deliverable](#) is accessible through our project website.



10 Rules of Honeybee Management: Have you already read our SAMS - management rules in [English](#), [Amharic](#) and [Bahasa](#)?



Flowering calendars of bee plants in ET and IN: Have you ever been interested in what local plants are important bee forage in [Ethiopia](#) and [Indonesia](#) and when they bloom? Visit our SAMSwiki and find out.



Newsletter in Bahasa Indonesia: CV.PI published a [newsletter](#) of the project activities in Indonesia starting from the beginning of the SAMS-project (01.2018) until 12.2019.



We want you! For our SAMSwiki, we are looking for people who want to become part of our community, share their knowledge and actively contribute to the growth of SAMSwiki.

LOOKING FOR BUSINESS PARTNERS – INTERNATIONAL SAMS PROJECT

SAMS is currently developing three international partnership networks on 1) Business Management and Trade, 2) Data Management and Utilization and 3) ICT Technology and Services. The aim of the partnerships is to foster international cooperation and knowledge exchange between Asia, Africa and the EU in the long term as well as to ensure sustainability of SAMS and its impact. The partnerships will support the use and accessibility of SAMS modules such as the Data Warehouse and the SAMS System and serve as a knowledge exchange network on issues related to data-research, bee hive monitoring, and business implementation.

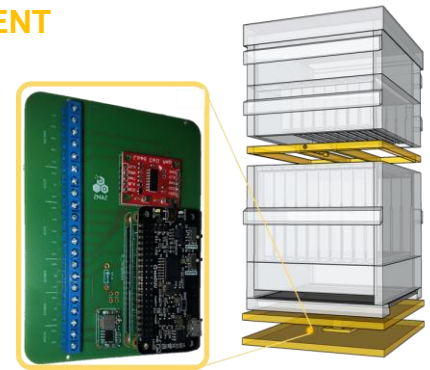
To stay up-to-date with the project and find a way to collaborate, contact us through the [Partnership Application Form](#). Interested parties can apply in a few easy steps to the SAMS partnerships.

By GIZ

SAMS Hardware, Software and Data Warehouse Updates ...

FIFTEEN NEW SYSTEMS AT UNI KASSEL AND NEW EQUIPMENT FOR ID AND ET

Components for further 37 HIVE systems have been shipped to Indonesia and Ethiopia. Fifteen new systems are under installation at the test site of Uni Kassel. The system has been improved including PCB design, better energy management, 3D printable sensor case, more stable software with error report on GitHub, even more user-friendly user interface. Furthermore, costs for the systems have been reduced by 20%.



Picture: SAMS hardware.

By UNIKAS



Pictures: Interns from Polytechnic of Bandung assembling the Node MCU).

SAMS HARDWARE TESTING BY THE INDONESIAN DEVELOPMENT TEAM

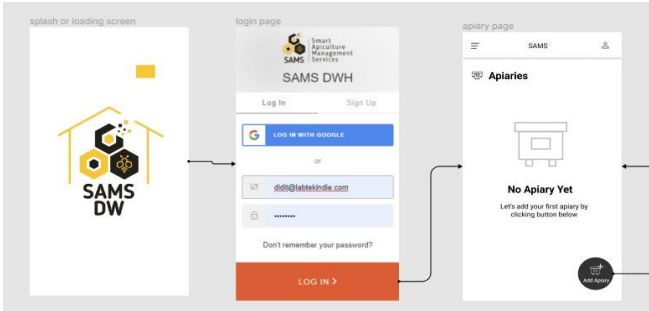
Earlier this year, the CV.PI development team was welcoming students of Polytechnic of Bandung.

While waiting for the improved RaspberryPi firmware, we tried to experiment with different kinds of computers to try potential cheaper systems, comparing the quality of the created monitoring systems and to work on general improvements based solely on the user needs gained during our UCD research. Our research told us that beekeepers in West Java mostly care for colony absconding, whether it relates to climate or forage. This can be detected minimally only with weight scale, temperature and humidity sensors, which can be handled with Node MCU. Node MCU is also a potential alternative firmware despite its small and compact dimensions, and they come with WIFI features. Also, the lower price compared to RasPi makes it easier to be localized.

Currently, there are 3 Node MCU modules that are being tested by the development team, namely Node MCU V3, Mini D1 and esp32

module. To use more sensors for the same microcontroller, the development team also examined one wiring for the ds18 temperature sensor on the Node MCU. We also conducted a stress test by running the Node MCU system with each sensor, using a code made by Armand Kvisis, from UNILV. The problems arise from the test results being analyzed through troubleshooting activities. Most problems that occur include inability to reignite after deep sleep, emit smoke and damage in certain circumstances, inability to function using batteries, unread sensors, persisting reboot loop, and so on. During January to February, the exploration and development of 2 Node MCU packages to be implemented was also done.

By CV.PI (+ Labtek Indie)



Picture: Interface of the SAMS DSS software.

SAMS DSS software prototyping in progress...

The SAMS Decision Support System (DSS) software prototype making has also progressed significantly. Starting from a simple sketch and scribble, it has currently evolved to be a hi-fi prototype with a clickable (interactive) version. The interactive prototype is also planned to be tested through a series of Usability Testing on beekeepers’ respondents in April 2020.

By CV.PI (+ Labtek Indie)

TWO TEST SYSTEMS INSTALLED AT LLU

LLU team started testing and evaluation of SAMS hive monitoring devices. Two systems are installed at the specific bee wintering building for bee colony monitoring. Measurement interval is set to 2 minutes. Findings about detailed food consumption by the colony will be made after this experiment.

By UNILV



Picture: Alternative SAMS hive monitoring system.

UNILV DEVELOPED ANOTHER SAMS HIVE MONITORING DEVICE

LLU team developed a simplified SAMS hive monitoring device based on ESP8266 microchip for bee colony weight and temperature monitoring. This monitoring system is developed considering locally (in Ethiopia and Indonesia) available components. Moreover, the overall price of the SAMS system is decreased and energy efficiency is increased.

By UNILV

DATA WAREHOUSE UPDATES

Data Warehouse is fully operating and data from installed SAMS hive monitoring systems is stored there.

- ✂ Additional option to register a SAMS hive with default configuration and sensors is added to the warehouse, thus the process of configuring/registering devices has become more user friendly.
- ✂ Logs from monitoring systems now are accessible in the warehouse for faster diagnosis of hardware or data transfer problems.
- ✂ Data Warehouse user interface and dashboard view is updated, adding some visual improvements and modifications for better usability.
- ✂ User access tokens now are managed by the Data Warehouse.
- ✂ Some back-end improvements include update on data processing. Thus, data can be accepted without timestamp and several measurements with a known measurement interval can be processed.

By UNILV

Meetings Meetings Meetings ...

03.2020 - 6TH STEERING COMMITTEE MEETING IN JELGAVA, LATVIA

The 6th SAMS Steering Committee Meeting took place from March 4-6 and was hosted by the Latvia University of Life Sciences and Technologies (LLU) in Jelgava. As SAMS is approaching the last project phase, the project beneficiaries discussed the progress of the last months as well as next steps ahead towards project end in December 2020. Each work package's progress was discussed and specific topics concerning SAMS business modeling, data use and management, SAMS partnerships and the SAMS Final Conference were addressed in round table discussions in order to develop strategies and solutions for the next months. The round tables were held in the manner of a World Café, providing opportunity to all project beneficiaries to provide input to each topic. The successful event was topped with an ice-skating session nearby the university campus, where some of the project members enjoyed their first experience on ice.



By GIZ

SAMS Capacity Building Activities

02.-03.2020 - CB activities in Ethiopia

Three CB trainings were conducted to 106 participants of which 40 people were beekeepers and 66 were apiculture researchers or/and beekeeping experts. Out of those 106 training participants, 44 were females (38 beekeepers, 4 researchers and 2 beekeeping experts). CB trainings were planned to introduce participants to the SAMS monitoring system and to increase the knowledge of the participants on the ten bee management rules, bee health related issues and business development on beekeeping activities. During the training, we focused on the topics how to increase production and productivity of beekeeping and the use of the SAMS monitoring system in different disciplines of beekeeping (queen breeding, honey yield improvement, pollination services). The approach and gained knowledge were evaluated as very good. However, the trainees underlined the need for future capacity building to raise knowledge and awareness of beekeepers, extension agents and all concerned groups on how to get more practical knowledge on the application of the beehive monitoring system and how to integrate the utilization in to different beekeeping systems.



Pictures: Introducing participants about business development and marketing of bee products (top); demonstrating installed beehive monitoring to some training participants (bottom).

By Holeta

01.2020 - Co-creation workshop

On January 17, 2020 iceaddis organized a co-creation workshop for apiculture stakeholders in Ethiopia. It was attended by several startups and experts in the apiculture industry. The main goal of this co-creation workshop was to develop sustainable business prototypes on top of the SAMS technology, which is designed for further development by local startups and adoption in the industry. The second aim of this co-creation workshop is to collect feedback from the apiculture stakeholders on how to improve SAMS's services for future development in the contexts of Ethiopian beekeepers.



Picture: iceaddis hold a SAMS co-creation workshop.

By iceaddis

Other Exciting News and Project Activities



Biosystems Engineering
Volume 193, May 2020, Pages 90-100



Research Paper

Application of fuzzy logic for honey bee colony state detection based on temperature data

Armands Krievsis, Vitalijs Komasilovs, Oļvija Komasilova, Aleksejs Zacepins

NEW SCIENTIFIC ARTICLE AVAILABLE

Scientific paper with title “Application of fuzzy logic for honey bee colony state detection based on temperature data” is accepted to the Journal of Biosystems Engineering and is [published online](#).

By UNILV

NEW ARTICLE IN AUSTRIAN BEEKEEPING MAGAZINE

UNIGRA published a travel report of the prototyping workshop in Bandung in Austria's biggest beekeeping magazine [Bienenaktuell](#). The article is not open access, but it was allowed to publish it for all interested readers on [bienenstand.at](#).



By UNIGRA



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SAMSwiki in other languages

English
Amharic (Ethiopia)
Bahasa (Indonesia)

SAMSwiki SOON AVAILABLE IN ENGLISH, BAHASA AND AMHARIC

The SAMSwiki grows further and further... UNPAD, Holeta, iceaddis and UNIGRA are working together to translate the English content, which was already published on the SAMSwiki, into Bahasa and Amharic. Some progress was already made. Currently, there are 20 sub-chapters available in [Bahasa Indonesia](#) – the number will further increase in the next weeks.

By UNIGRA

IN SEARCH FOR BEEKEEPER PARTNERS IN INDONESIA

There are at least 45 hardware prototypes that need to be implemented as soon as possible. Surely, to reach these numbers there are some efforts that need to be done. Therefore, the CV.PI research team began to look for more potential beekeepers as research and implementation partners, who are willing to collaborate by allowing SAMS to monitor their colonies. To support this, the research team re-approached our beekeeper partners who have been collaborating with SAMS, and actively seek for other potential beekeepers.



Picture: Mr. Koswara working at his apiary.

Our first step began with visiting Mr. Aep from the Babussalam apiary in Ciburial, Bandung. We have installed two prototypes there and plan to install 2 more. However, Mr. Aep asked us to make preparations more carefully in the future implementation. One of the intended preparations is to select specific places for the colony with less threat of pests, given the previous two implemented colonies were attacked by ants.

In a further step, we approached Mr. Koswara, a beekeeper from Madu Maribaya Apiary – he has 200 colonies of *Apis cerana* and *Trigona laeviceps*. Considering a lot of research has been done at the apiary by other universities, Mr. Koswara claimed to feel the various benefits gained from these studies and therefore supports our plan. He hopes that the SAMS technology could also benefit him both in terms of knowledge, and in the practice of beekeeping. At Mr. Koswara's apiary, we plan to install 8 SAMS prototypes.

Through the processes above, we have secured a plan to implement 10 prototype installations. But searching for the other 35 colonies is not easy for us, considering the lack of institutions to unite beekeepers in West Java. Since existing associations are more dominated by honey brokers and middlemen, rather than the beekeepers who do real beekeeping. In the near future, we plan to search for new beekeeper partners through the interpersonal beekeeper network of Mr. Aep and Mr. Koswara.

By CV.PI (+ Labtek Indie)

MARKET RESEARCH SURVEY - ETHIOPIA

iceaddis conducted a market survey between Nov 2019 - Jan 2020 on honey consumers' behaviour, specifically on their motivation to buy honey and on the factors that lead to the decision to buy honey. The survey was published online and on a printout paper for those who don't have access to internet. In total, the survey was responded by 53 honey consumers sharing their preferences and purpose use for the honey they buy.

By iceaddis



Picture: Main market research results.

MARKET RESEARCH - INDONESIA

Market survey activities are carried out in 2 categories, honey consumers market survey and technology products. The consumers market survey aims to determine consumers behavior in buying honey, while the technology market survey aims to determine the SAMS technology market segment.

This research was conducted from October 2019 to March 2020 using qualitative and quantitative methods. The tools used are questionnaires for both market surveys (honey consumers and technology). Distribution of honey consumer market survey questionnaires was done both online and offline to honey consumers. Like the honey consumer market survey, technology questionnaires are also distributed both online and offline through interviews, telephone calls, WhatsApp, and FGDs.

From the results of this survey of 445 respondents, it was found that 92% were honey consumers, and 8% were not honey consumers. Honey consumers intend to share with others or consume honey with their family at home. The frequency of consumption is quite low (once a month). The most popular type of honey is the forests' honey, and most of them are bought from retail stores. Respondents prefer to purchase honey from local producers and trust domestic honey more than imported honey. The most desired information the consumers want to find on the honey packaging label is the best before date. Many honey producers still put very limited information about the product on the packaging label, and some of them even do not include the packaging label at all.

By UNPAD

STATUS OF BUSINESS DEVELOPMENT IN INDONESIA

In Indonesia, the business development model has been designed since 2018 through the development of honey-derived products. It was followed by the event "SAMS - International Seminar & Ideathon" on July 7, 2019. In this event, the UNPAD team has screened eight new business ideas in beekeeping. These business ideas will then be reviewed to see market needs and sustainability as part of the ten business ideas that will be offered in the SAMS project. Apart from the Ideathon results, business ideas will also be arranged referred on the results of an earlier market survey analysis.



Picture: Lean Canvas for SAMS Business Development.

In parallel, the CV.PI team has also begun making business plans in an effort to follow up SAMS technology development going forward. This business planning began with a workshop on making Value Proposition Canvas and Lean Canvas to provide a clear definition of the value that the product or service should offer. Compared to the Value Proposition Canvas, the mapping outlined in Lean Canvas is more detailed. Here, we were not only identifying the value of the products we offer, but also map the problems experienced by potential customers, the solutions we offer with key metrics, what sales channels are strategic, and of course the mapping of cost structures and possible revenue. Of course, making this canvas is still an early step in the SAMS business development process going forward. However, the ideas expressed in these canvases are a contribution to the execution of SAMS business in Indonesia, which will be more implemented by the UNPAD team.

By UNPAD and CV.PI (+ Labtek Indie)

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