



International Partnership on Innovation

SAMS - Smart Apiculture Management Services

Deliverable N°7.5

ICT Apiculture Network Conference (SAMS Conference)

Work package 7

Dissemination and Communication

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SAMS consortium partners

Logo	Partner name	Short	Country
	Deutsche Gesellschaft für Internationale Zusammenarbeit (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

CB	Capacity Building
DoI	Declaration of Intend
DSS	Decision Support System
DW	Data Warehouse
ICT	Information and Communication Technologies
IoT	Internet of Things
MCU	Microcontroller unit
LoI	Letter of Intend
PLC	Powerline Connection
PS	Partnership
2G/3G	second and third generation cellular network technologies
SD card	Secure Digital card
SB	Steering Board
SDG	Sustainable Development Goals
SCM	Steering Committee Meeting
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 behavioral response
- Implementation SAMS Business cooperation

Contents

SAMS consortium partners.....	2
Summary of the project	4
Project objectives	4
Contents.....	6
List of tables / figures	6
Executive summary	7
1. Concept of the SAMS Conference.....	8
1.1 Original concept of the SAMS Conference	8
1.2 New concept adapted to the Corona pandemic.....	9
2. Content of the SAMS Conference	11
2.1 Topic areas	11
2.2 Speakers of the conference.....	11
Speakers from the SAMS Consortium.....	11
External Speakers	16
2.3 Q&A sessions.....	18
2.4 Launch of the new international ICT Api Network.....	18
3. Promotion of the SAMS Conference	20
4. Conduct of the SAMS Conference	21
Annexes 1 - registration form on the SAMS project website	24
Annexes 2 – Promotion flyer of the SAMS Conference	26
Annexes 3 – Program of the SAMS Conference.....	28
Annexes 4 – Digital conference booklet	30

List of tables / figures

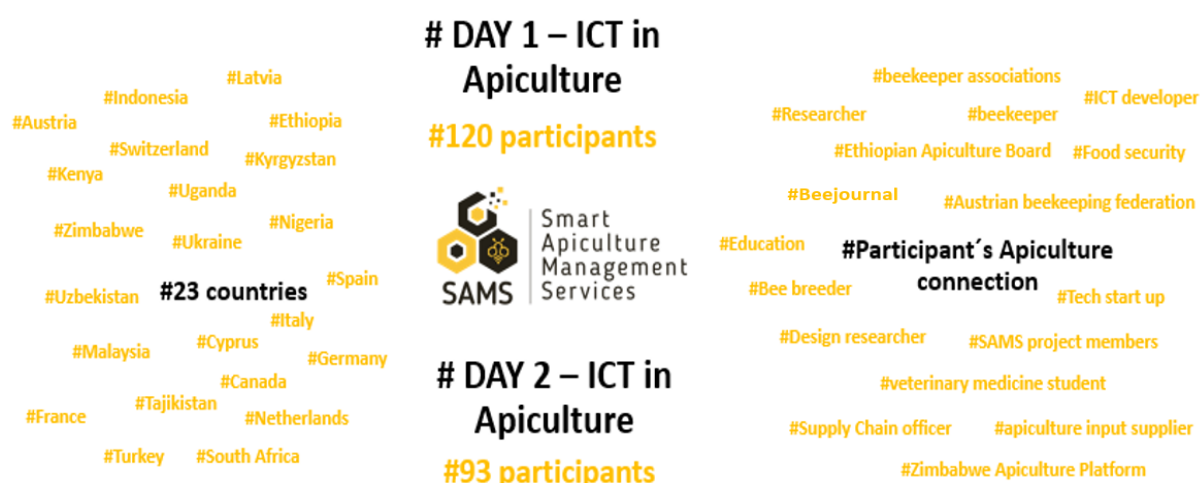
<i>Table 1: Presentation of SAMS Consortium speakers.....</i>	12
<i>Table 2: Presentations of external speakers.....</i>	16
<i>Table 3: Promotion of the Conference by the SAMS partners</i>	20

Executive summary

The *SAMS Conference – ICT in Apiculture* served to disseminate the SAMS results within a professional and interested community, provided a networking place and enabled discussion on the long-term prospects of the project.

Due to the Corona Pandemic the event was – contrary to the original concept – conducted as an international online event. It was decided to concentrate on prepared presentations from SAMS project speakers and external speakers within SAMS' field of action. All presentations and content for the conference were produced in the forehand as video to ensure that instable internet connections on speaker side do not disturb the presentation.

233 interested stakeholders from 33 countries have registered for the SAMS final conference of which 120 participants (Wednesday Nov 25,2020) and 93 participants (Thursday Nov 26,2020) joined the conference in the end. During both days the moderator requested the participants to share information on their background and origin via the MS Teams chat function.



It cannot be assumed that all participants followed this request. Nevertheless, it became clear that the event had a greater outreach than expected and it assumed that this could not have been done with a physical event. Therefore, the conference was a complete success when it comes to the fact of international networking and knowledge exchange.

Contrary to the talks the Q&A sessions and discussions were conducted as live sessions to ensure the interactivity of the conference.

1. Concept of the SAMS Conference

1.1 Original concept of the SAMS Conference

The *SAMS Conference – ICT in Apiculture* had three aims:

- Disseminate the results of SAMS in an interactive way
- Provide a networking place for professionals and interested individuals from the apiculture sector worldwide
- Leading discussions on the long-term prospects of the SAMS project and its result uptake

Under the original concept of the *SAMS Conference – ICT in Apiculture*, the event would have been conducted as a physical conference meeting at the University of Kassel in Witzenhausen, Germany. This venue would have been very suitable for the event, as the hives with the installed SAMS system are in the neighbourhood of the university, SAMS partnership members would have been in the area and be able to participate and the conference could have been conducted very interactive by testing systems and software and enabling agricultural, especial apicultural, stakeholders to join the conference. With these installed hives the results of the SAMS project could have been presented in a very interactive and haptic way. Furthermore, the scientific community of Witzenhausen could have easily participated in the conference.

During the Steering Committee Meeting (SCM) 6 in Jelgava in March 2020, several ideas were brainstormed about the content and setup of the conference:

- Conference as a symposium in Kassel
- Setup up of a SAMS hardware lottery
- The conference conducted as bar camp - where students (including female students), researchers and local beekeeping experts could attend.
- The consortium had the idea of joining the ICT Conference in Cologne with a small input / slot for SAMS / SAMS speaker at the ICT conference, which was also cancelled
- Set up a SAMS scale on which people can weigh themselves and show on a screen what happens at the SAMS Data Warehouse
- Connection of different hive monitoring systems with the Data Warehouse
- Workshop with SAMS hive building/ monitoring compilation
- Hive from UNIKAS and show what the monitoring system can detect
- Market place with SAMS Business Cases?

Furthermore, the Partnerships should have been highlighted together with the partnership leads and other board members as well as external members. Furthermore, the official launch

was planned as ceremony where leads, board members and further partnership members would have signed the partnership agreements.

1.2 New concept adapted to the Corona pandemic

When the Corona pandemic hit the world in the beginning of 2020, the SAMS coordinator GIZ decided that the final conference of this international project should be conducted as an online conference. Therefore, a new concept was developed. The conference was planned to be conducted via the online meeting tool Microsoft Teams and organized via the SAMS project website. As not all developed ideas were possible to transfer into the digital meeting space, it was decided to concentrate on well prepared presentations from SAMS project speakers and external speakers within SAMS' field of action.

All presentations and content for the conference were planned to be produced in forehand as video. To ensure the interactivity of the conference, the Q&A session and discussion were planned to be hold live via online meetings. The conference was planned for two days, 25th and 26th of November 2020 and was held from 8:30 to 12:30 UTC+1, German time at both days to enable an easy participation also for the Indonesian partners despite the time shift of six hours.

To enhance the interactivity in the sharing of project results it was originally planned to have local public viewing events at the SAMS partner organizations in the different project countries. Here, even the workshops on the SAMS hardware could have taken place. However, as also small public assemblies were prohibited in November 2020 due to the Corona pandemic, these local public viewing events were cancelled. However, to increase participation from target countries, pre-events were conducted in Indonesia. A two-day web seminar and live discussions were held online, promoted and supported by the West Java Forestry Department Office. The topics are gradually leading to the SAMS monitoring system, starting from the discussion on general use and practices of IoT in beekeeping to IoT in beekeeping practices. Nine experts were involved with various backgrounds such as data science, IoT practitioner, lecturer, insect expert, product engineer, and a researcher from Bogor Agricultural Institute who studied bees. These events reached 117 participants from Sumatera to Kalimantan (Borneo Island) which came from different backgrounds such as beekeepers, honey traders, students, government, and environmentalists/activists. The events were conducted in Bahasa and aimed to promote SAMS dissemination and final conference.

Furthermore, it was considered to translate the input of the conference in the local languages Amharic and Bahasa, which most beekeepers in the partner countries speak. However, it was found that the technical conditions were insufficient to provide this service and after public viewing events could also not take place, instable internet connections made a participation of beekeepers unfeasible, as they mainly live in remote areas. Therefore, the language of the international conference was solely English.

Technically, the registration for the conference was organized via the SAMS project website. A screenshot of the registration form can be found in the Annex 1. Along with this registration form the participant agreed on the usage of the data for the purpose of the conference and the SAMS project. Furthermore, participants agreed that personal data as well as video and photo material of the conference is being stored for a period of 10 years duration, as GIZ was the responsible partner and therefore internal rules apply for this event. The organization of the

SAMS Conference – ICT in Apiculture complied with the General Data Protection Regulation (GDPR) of the EU.

During the conference the participants were guided via a digital program. A screenshot of the digital program can be found in the Annex 3. For further information about special topics and about the speakers, the digital program worked as a digital booklet of the conference.

Originally, it was planned that the SCM 8 takes place directly following the SAMS Final Conference before participating in the ICT 2020 in Cologne. As the SCM 8 was also transferred into the digital space, there was no need to combine these two events locally and timewise. It was decided within the SAMS consortium that the SCM 8 took place at the 30th of November and 1st of December 2020.

2. Content of the SAMS Conference

2.1 Topic areas

The content of the SAMS Conference was chosen to reach the three aims of the SAMS Conference:

- Disseminate the results of SAMS in an interactive way
- Provide a networking place for professionals and interested individuals from the apiculture sector worldwide
- Leading discussions on the long-term prospects of the SAMS project and its result uptake

Therefore, the following broader topics were defined:

- Introduction to the SAMS Project
- Bee Health Monitoring
- Beekeeping in different regional contexts worldwide
- Bee Data: Analysis, Data Management, Data Usage
- Political Frameworks and Policies influencing the Apicultural Sector
- Business Potentials in the Apiculture Sector
- SAMS Partnerships

2.2 Speakers of the conference

To cover the above-mentioned broader topics for the SAMS Conference, several presentations and discussion topics were planned. The presentations were prepared by either SAMS consortium partners in their area of expertise, or by external speakers, who are experts in the respective fields. The external speakers were identified throughout the project duration at conferences, seminars and networking events, or are part of the broader professional network of the SAMS consortium partners.

Speakers from the SAMS Consortium

The following *Table 1* lists the titles of presentations and names of speakers from the SAMS consortium and is linked to the respective pre-recorded talks which are available on the SAMS YouTube channel. The aim of the presentations given by the SAMS consortium was to disseminate the project results and enable interested stakeholder to transfer them in their respective country context. A more detailed program of the conference can be found in the Annex 4.

Table 1: Presentation of SAMS Consortium speakers

Title of the presentation	Speakers
SAMS Framework – project outcomes and results	Stefanie Schaedlich, GIZ GmbH, coordinator of the SAMS project
SAMS Hive system – introduction to the SAMS hive system SAMS System set-up – a technical and practical description of the SAMS Hive System	Sascha Fiedler, University of Kassel
SAMS System Implementation – how the SAMS System was implemented in Ethiopia and Indonesia	Amanda Manggiasih Paramita, CV. Primary Indonesia/AB Member Labtek Indie
User Centered Design (UCD) Concept in SAMS – the iterative process of the product design of the DSS and SAMS System	Amanda Manggiasih Paramita (CV.PI/AB); Magdalena Sperl (GIZ), Katrin Proschek (AB)
SAMSwiki – the international knowledge platform for apiculture	Kristina Gratzner, University of Graz
Capacity Building in Indonesia	Anas Bunyamin, UNPAD
– how the SAMS bee data is stored and processed. Video on SAMS ESP8266 System	Aleksējs Zacepins, Armands Kviesis; Vitalijs Komasilovs, Latvia University of Life Sciences and Technologies
Policies, framework, cooperation's in the apicultural sector in Ethiopia and Indonesia	Nur Al Faizah, Taufik Ginanjar Danuwidjaja, UNPAD Negash Bekana, Ethiopian Apiculture Board
Business Concepts und Potential in the apicultural sector in Ethiopia , Indonesia and the EU	Dwi Purnomo, UNPAD Yosef Alemayehu. ICEADDIS
The International Partnership Network of the SAMS Project PS1: International Partnership on SAMS Business Development PS2: International Partnership on Bee Colony Data and Knowledge Exchange PS3: International Partnership on Apiculture Technologies and Services Partnership Network in Ethiopia	Kibebew Wakjira, Holeta

Speakers from SAMS Consortium and SAMS Advisory Board**Stefanie Schädlich**

Stefanie Schädlich has been with GIZ for the past 4 years and leads also the H2020 project KeepWarm. Before the involvement in the two H2020 projects SAMS and KeepWarm, she has been involved in the German Government and federal state pilot programme where she worked closely together with the Bavarian Ministry of Economic Affairs, Regional Development and Energy.

Sascha Fiedler

Sascha Fiedler is a researcher at University of Kassel, Germany. He developed the hardware of the SAMS HIVE monitoring system and was responsible for the implementation of the SAMS HIVE Monitoring System in EU and supported the implementations in Ethiopia and Indonesia.

Yosef Alemayehu

Yosef Alemayehu is working for ICEADDIS, Ethiopia. Within the SAMS project he was responsible for the User Centered Design approach, the business development and the implementation of the SAMS HIVE monitoring system in Ethiopia.

Amanda Manggiasih Paramita

Amanda Mita works mostly as a program manager, design researcher, and facilitator. She has worked with various national companies as well as international partners such as Hivos (Netherlands), British Council (UK), IIED (UK), and GIZ (Germany) for projects with various topics like food sustainability, citizen-driven cities, ICT for communities, and urban planning.

Armands Kviesis

Armands works at Faculty of Information Technologies at Latvia University of Life Sciences and Technologies as an assistant professor and lead researcher. He has participated in several international scientific projects that cover such fields as precision agriculture (specifically precision beekeeping) and smart cities. His research interests include Internet of Things, embedded systems, decision support systems, artificial intelligence and their application in various fields.

Vitalijs Komasilovs

Vitalijs works at Faculty of Information Technologies at Latvia University of Life Sciences and Technologies as an associated professor and lead researcher. He has been involved in several international scientific projects related to the smart cities, precision agriculture and precision beekeeping. His passion is development of the software products and web systems.

Aleksejs Zacepins

Aleksejs works at Faculty of Information Technologies at Latvia University of Life Sciences and Technologies as an associated professor, lead researcher and scientific project manager. He leads several Horizon 2020 projects related to the Precision Beekeeping and biogas sector. Previously also projects related to the Smart city, Precision Livestock Farming were developed.

Nur Al Faizah

Nur Al Faizah works mostly as project manager and facilitator. Beside Nur Al Faizah involvement in SAMS Project, she is also a member of a social enterprise-based community which focuses on community empowerment, social innovation, and social impact. She is also involved in several research projects led by Dwi Purnomo.

Anas Bunyamin

Anas Bunyamin is a lecturer and researcher of Agro-industrial Technology Faculty of University Padjadjaran. His Expertise is in process technology. Together with Dwi Purnomo, he is also involved in agro-industrial technology and science-based entrepreneurship development using Design Thinking for Social Innovation.

Taufik G. Danuwidaja

Taufik is an alumnus of University Padjadjaran who has been involved in the SAMS project since early 2018. As well as being involved in the SAMS project, Taufik has also been involved in Unpad programs several times since 2017, especially programs led by Dwi Purnomo. He is also a member of a social enterprise-based community which focuses on community empowerment, social innovation, and social impact.

Magdalena Sperl

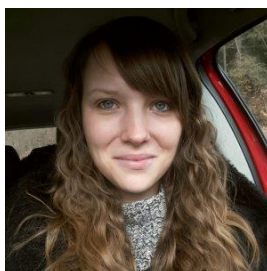
Magdalena Sperl has been with Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH for two years. Within the SAMS project she was mainly responsible for the User Centered Design approach including business development. Moreover, she moderated the Final Conference.

Kibebew Wakjira

Kibebew Wakjira is a researcher at Holeta Bee Research Centre, Ethiopia, mostly involved in investigating aspects of bee management, pollination ecology and bee botany. Within the SAMS project he was responsible for the transfer studies, the SAMS partnership networks and the implementation of the SAMS HIVE monitoring system.

Robert Brodschneider

Robert Brodschneider is a researcher at the Institute of Biology at the University of Graz, Austria and lecturer of honeybee biology and pathology at the University of Natural Resources and Life Sciences Vienna and the University of Veterinary Medicine, Vienna. In his research he focusses on the nutrition of honeybees on adult, larval and colony level. In 2008 he established the investigation of colony losses in Austria, and since 2014 he is co-chair of the international colony losses monitoring group of the honeybee research association COLOSS, where he is also an executive committee member since 2013.

Kristina Gratzner

Kristina Gratzner works at the Institute of Biology at the University of Graz in Austria as a research associate. She has experience as a project manager and has participated in several international scientific projects dealing with honeybees, beekeeping and Citizen Science. Her research interests include beekeeping for development, honeybee forage and Citizen Science.

Dwi Purnomo

Dwi Purnomo is a lecturer and researcher of University Padjadjaran. Recognize experience in agro-industrial technology and science-based entrepreneurship development using Design Thinking for Social Innovation. Currently he has initiated more than 100 applied-technology-based start-up businesses and products by connecting businesses stakeholders from upstream to downstream using Design Thinking for social innovation.

Katrin Proschek



Katrin Proschek works for icebauhaus e.V. which is an Advisory Board member. She is an UX consultant and supported the SAMS project in the User Centered Design approach.

Negash Bekana Turga



Negash Bekana Turga is the General Manager of Ethiopian Apiculture Board (EAB) leading the Secretariat since 2011. He is also working as Secretary-General for the African Union (AU) initiative Africa Apiculture Platform to promote beekeeping in all AU member states. He represents the EAB at Apimondia and represents Ethiopia in Apitrade Africa. For ApiTrade he is acting as a national coordinator for different events like Apiexpo Africa if organized in Ethiopia. He is also one of the **SAMS local**

Advisory Board members actively supporting project implementation in Ethiopia.

External Speakers

The following *Table 2* lists the titles of presentations and names of speakers of the external contributors. These presentations enriched the program of the conference with an external view. The external presentations were combined in different slots with the project result presentation to stimulate discussions in the impact fields of SAMS. A more detailed program of the conference can be found in the Annex 4.

Table 2: Presentations of external speakers

Title of the presentation	Speakers
Bee health monitoring study – insights on correlation of winter colony losses to the varroa mite and the grad of beekeeper experiences	Dr. Linde Morawetz
Environmental Data Monitoring for Bee Health - the Concept of Health4Bees	Markus Bärmann
Beekeepers' Needs of Data - BeeKing, your Digital Beekeeping Assistant	Janis Kronbergs
BeeXML Network - Standardization of Bee Data	Joseph Cazier, Marten Schoonman
Bee Policy Best Practices in Europe	Thomas M. Klotz

Dr. Linde Morawetz

Dr. Linde Morawetz is a zoologist and has worked with a range of bee species for the last 15 years. For the last 6 years she has been concerned with projects about honeybee health focusing on varroa mite, viruses and colony losses. Furthermore, she is interested in knowledge transfer between researchers and beekeepers and how it can be improved in order to increase bee health.

In her talk about a ***Bee Health Monitoring Study in Austria*** she explained the correlation of winter colony losses with the varroa mite and with the grad of experience of beekeepers.

Markus Bärmann

Markus Bärmann is an experienced master beekeeper and has been fighting for bee protection for decades. He published his first patent for the protection of bees against the varroa mite in 2001, more than 15 years before the word “bee mortality” was created. Markus Bärmann has now adapted this first patent to the meanwhile further developed technical possibilities and thereby improved it.

In his talk ***Environmental Data Monitoring for Bee Health - the Concept of Health4Bees*** he explained the potential of an artificial polymeric foundation for beekeeping.

Janis Kronbergs

Janis Kronbergs is a beekeeper with master's degree in telecommunications and practical background in business development. He is Member of the Council of Latvian Beekeepers association and regional lead of beekeepers of Sigulda district. Janis Kronbergs is founder of the company BeeTech Services and development manager of the BeeKing App. Janis Kronbergs is part of the International Partnership on Bee Colony Data and Knowledge Exchange

In his talk ***Beekeepers' Needs of Data - BeeKing, your Digital Beekeeping Assistant*** he presented a user survey of his company, which explained the needs of data and monitoring of beekeepers.

Ph.D. Joseph Cazier and Marten Schoonman

Ph.D. Joseph Cazier and Marten Schoonman are representing the beeXML network at the SAMS Conference on ICT in Apiculture. beeXML.org is a collaboration platform for the standardization of the exchange of data about bees and beekeepers. beeXML.org is focused on supporting your use of the beeXML standard by:

- Documenting the standard
- Documenting our implementation experiences
- Providing a beeXML Implementation Guide
- Collaboration with other standards bodies
- Providing assistance in properly understanding and interpreting the BeeXML standard

- Supporting all projects in their efforts to exchange of data about bees and beekeepers in a standardized format

In his talk **BeeXML Network – Standardization of Bee Data**, Joseph Cazier introduces the concept of beeXML and the needs of standardization of word wide collected bee data.

In the conference, Joseph Cazier explained the concept and needs of BeeXML.

Thomas M. Klotz



Thomas M. Klotz holds a diploma degree in political science from the Bavarian School of Public Policy and works as a head of unit at the Academy for Politics and Current Affairs of the Hans Seidel Foundation. His dissertation at the School of Governance of the Technical University of Munich is entitled “Save the bees! How an insect changes our democracy”. For eight years, he is a hobby beekeeper with about ten hives and board member of the beekeeping club Tegernsee.

In his talk **Best Practices of ,Bee Policies‘ in Europe** he explains the political importance of the honeybee and best practices in policies regarding the conservation of the apicultural sector in Europe.

2.3 Q&A sessions

As previously mentioned, talks were pre-recorded to ensure a stable transfer of content to all participants and to reduce possibilities of connection issues. Contrary to the talks the Q&A session and discussion were conducted as live sessions to ensure the interactivity of the conference

2.4 Launch of the new international ICT Api Network

As part of the SAMS Final Conference on ICT in Apiculture the initiated three partnerships on

- PS1 – International Partnership on SAMS Business Development
- PS2 - International Partnership on Bee Colony Data and Knowledge Exchange
- PS3 - International Partnership on Apiculture Technology and Services

were officially launched during this event. The partnerships were developed for the means of sustaining the results and ideas developed between January 2018 and December 2020 within the SAMS project.

These partnerships were initiated in the spirit of maintaining and strengthening mutual learning and knowledge exchange as well as promoting international collaboration within the apiculture sector and scientific society. They overall aim of all three PS is to foster modern and precision beekeeping and to sustain, refine and disseminate and uptake SAMS products and ideas.

For formalization of the partnerships, partnership agreements were developed and provided by GIZ and agreed on with the partnership leads. They define the terms of understanding

between the partners and were created with the purpose to create a formal basis of collaboration by promoting mutual understanding on the aims, activities and context of the partnerships amongst all partners. Two different types of partnership agreements were developed – one for the founding partners/ Steering Boards (DoI) and one for additional members (LoI).

As all three partnerships have established a Steering Board (SB) each lead of such partnership presented the different approaches and goals to the audience and signed officially the Declarations of Intent. Main contacts persons for each partnership are the following ones.

- PS1: HOLETA, UNPAD, The Local Enablers
- PS2: UNILV; Labtek Indie, Dr. Robert Brodschneider
- PS3: Sascha Kirchner, Sascha Fiedler, HOLETA, Labtek Indie

Their contacts can be found on the [SAMS website](#).

Due to Covid-19 travel and meeting restrictions, partners could not meet in one room to complete the signatures of the Declarations of Intent. Therefore, the three DoIs were pre-signed by all founding members except for the partnership leads who signed the DoI's during the live-signature ceremony. During the signature ceremony the GIZ project coordinator introduced the three partnerships and partnership leads, who then signed the respective Declarations of Intent. Through signature of the DoI the partnerships were formally founded and the SB members endeavour to stimulate, coordinate and support activities, projects and communication within the partnership under the scope of the partnership aims and goals. They become operative on the day of signature and last until December 2024.

Furthermore, as mentioned Letters of Intent were developed for and signed by partners which are not part of the partnership Steering Board. The signing procedure took place before the Final Conference and was partly recorded, and the videos were shown during the final conference. Through signature of the LoI, the partners endeavour to collaborate with the partnership network to promote the partnership aim and goals. The partners within the partnership network jointly decide on activities to foster the development of and research on SAMS services and technologies in the apiculture sector.

More information on the documentation of the established partnership networks and agreements can be found in the report section on the [SAMS website](#).

3. Promotion of the SAMS Conference

To make the SAMS conference an effective event for dissemination, networking and discussion it was decisive to address and approach the SAMS target groups. Therefore, the WP 7 lead GIZ designed a flyer to inform about and promote the *SAMS Conference – ICT in Apiculture*. The flyer was spread through social media (Twitter, LinkedIn), the professional networks of the consortium partners and within the organisational structure of GIZ GmbH. Moreover, the flyer was disseminated in the professional networks of the external speakers. The flyer can be found in the Annex 2.

Table 3: Promotion of the Conference by the SAMS partners

Partner name	Type of Promotion	Channel
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH	<ul style="list-style-type: none"> Internal sector networks Individual invitations to previous newsletter subscriber Individual invitations to GIZ Country Directors in Ethiopia and Indonesia 	<ul style="list-style-type: none"> MS teams' channel of sector networks twitter SAMS website Email
University of Kassel	<ul style="list-style-type: none"> Internal sector networks Individual invitations 	<ul style="list-style-type: none"> Email Phone Direct contact
University of Graz (Institute for Biology)	<ul style="list-style-type: none"> Scientific network European AB members University of Graz press department Beekeeper network Bienenstand.at 	<ul style="list-style-type: none"> Emails Bienenstand.at website Social media (twitter)
Latvia University of Life Sciences and Technologies	<ul style="list-style-type: none"> Informing the local communities and university staff about the final conference Promoting the SAMS final conference at the events and other international conferences Individual invitations to the potential interested persons via local communication channels 	<ul style="list-style-type: none"> Social media (Facebook page of the faculty) Local communication channels
ICEADDIS – IT-Consultancy PLC	<ul style="list-style-type: none"> Ethiopian AB members individual invitations to potential interested people through email internal iceaddis community Conference to international Agritech start up community. 	<ul style="list-style-type: none"> Via email Social Media Digital Disruption in Agriculture Forum 2020
Oromia Agricultural Research Institute, Holeta Bee Research Center	<ul style="list-style-type: none"> Network of Ethiopian Apiculture board Advisory Board HOLETAs annual review meeting 	<ul style="list-style-type: none"> Via email Social media ApiNews

University Padjadjaran	<ul style="list-style-type: none"> Promoting the SAMS final conference at pre-events, two-day webinar and live discussions Advisory Board 	<ul style="list-style-type: none"> WhatsApp groups Indonesian Apiculture Association networks The Local Enablers Instagram account
Commanditaire Vennootschap (CV.) Primary Indonesia	<ul style="list-style-type: none"> Promoting the SAMS final conference at pre-events, two-day webinar and live discussions Advisory Board 	<ul style="list-style-type: none"> Social Media (Advisory board member's Instagram)

4. Conduct of the SAMS Conference

Number of registered participants: 233*

Origin of registered participants: **information on origin was no obligation*

• Austria	6
• Benin	3
• Brazil	2
• Cameron	9
• Canada	2
• Cyprus	2
• Denmark	1
• Germany	26
• Ethiopia	29
• France	2
• Ghana	4
• Indonesia	29
• Iran	1
• Italy	3
• Kenia	3
• Kyrgyzstan	2
• Latvia	10
• Madagascar	5

- Malaysia 4
- Malta 1
- Mozambique 1
- Netherlands 4
- Nigeria 7
- South Africa 6
- Sweden 1
- Switzerland 1
- Tajikistan 1
- Tanzania 3
- Trinidad 2
- Tunisia 1
- Uganda 7
- United States 12
- Zimbabwe 2
- No information provided 49

Background of registered participants: **information on background was no obligation*

- I'm a beekeeper: 60
- I'm a researcher in apiculture: 27
- I'm a researcher in data monitoring: 9
- I'm a scientist in a different field: 16
- I'm working in the public sector: 20
- I'm involved in a business in the bee product value chain: 44
- I have no background in apiculture and I'm just generally interested in beekeeping topics: 49

Number of actual participants: Nov 25,2020 – 120;

Nov 26,2020 – 93;

The list of registrations and participants will not be shared here as the data is confidential

Participating AB-Members:

- **Indonesia** The Local Enablers, Labtek Indie
- **Ethiopia:** GIZ Ethiopia, Ethiopian Apiculture Board (EAB), Ethiopian Honey and Beeswax Producers and Exporter Association (EHBPEA), Ministry of Trade and Industry (MoTI), Agricultural Transformation Agency (ATA), International Centre of Insect Physiology and Ecology (ICIPE)
- **EU:** icebauhaus e.V.

Annexes 1 - registration form on the SAMS project website

Take part in the SAMS Conference on ICT in Apiculture

Wed., 25.11.2020, 8:30-12:30 CET and

Thu., 26.11.2020, 8:30-12:30 CET

The conference will be held digitally in English via MS Teams.



Next to the project's results of SAMS, following topics will be presented and discussed:

- Dr. Linde Morawetz: Beehealth Monitoring Study – Austria
- Marten Schoonman: The BeeXML network – Standardization of Bee Data
- Markus Bärmann: Environmental Data Monitoring for Bee Health – Concept of Health4Bees
- Thomas M. Klotz: Environmental Policies in Europe impacting Apiculture
- Janis Kronbergs: Beekeepers' Needs in Data Monitoring – Concept of BeeKing

Find [here](#) the preliminary programme of the conference.

Please, register for the SAMS Final Conference via the form below:

Name *

Surname *

Organisation

Country

Email *

Please give us some information about your background

- ☐ I'm a beekeeper
- ☐ I'm a researcher in apiculture
- ☐ I'm a researcher in data monitoring
- ☐ I'm a scientist in a different field
- ☐ I'm working in the public sector
- ☐ I'm involved in a business in the bee product value chain
- ☐ I have no background in apiculture and I'm just generally interested in beekeeping topics

Networking

- ☐ Please, share my contact details with the other conference participants

In case you have a question or want to contribute to our conference with your topic about ICT in Apiculture, please, write us a short message!

Data protection *

- ☐ I hereby confirm my consent to the SAMS project partners to collect, process and store my personal data (Name, Organisation, Function, Country, E-mail address) exclusively for the purpose of the SAMS project.
- ☐ I confirm my consent that my personal data may be used by the project partners for publication and reporting purposes. By this confirmation the SAMS project partners are authorised to forward my data (name, organization, contact details, video and photo material) to the following organizations/ entities for further processing: SAMS Consortium and European Commission.
- ☐ I consent to my personal data (name, organization, contact details, video and photo material) being stored for a period of 10 years duration. The GIZ GmbH can contact me for the purpose of further use.
- ☐ I know, that I can withdraw from this agreement at any times by sending an email to the project partner GIZ.

Contact to the project partners can be found under <https://sams-project.eu/partners>. Further information on data protection can be found on: <https://sams-project.eu/cookie-policy/> You have the right to inquire at any time about the type of data processing, and to have the data corrected if they are incorrect, or to demand that their processing be restricted or that the data be deleted. Furthermore, you may withdraw your consent at any time to use of the photos and recordings. Please email withdrawal of your consent to stefanie.schaedlich@giz.de. This does not affect the lawfulness of any processing of your data before your consent was withdrawn. If you believe the data processing to be unlawful, you may contact GIZ data protection officer (datenschutzbeauftragter@giz.de), or lodge complaint with the responsible data protection authorities (DPA) - the authority responsible is the European Data Protection Supervisor (EDPS).

Submit

Annexes 2 – Promotion flyer of the SAMS Conference



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 780755.

H2020 | SAMS Project

CONFERENCE: ICT in Apiculture

Wednesday, Nov. 25th (8:30 to 12:30 CET)

Thursday, Nov. 26th (8:30 to 12:30 CET)



Safe the date & [register now!](#) We invite professionals from the apiculture sector, interested individuals and beekeepers to join our SAMS Final Conference. The fully virtual event will enable stakeholders from around the world to participate, discuss and exchange knowledge.

SAMS is a multi-national, interdisciplinary project, with the goal to promote beekeeping in tropical regions by applying Internet of Things (IoT) systems and Information and Communication Technology (ICT). More information: sams-project.eu

The conference will present results of the SAMS project from Indonesia, Ethiopia and the EU. Additionally, panel discussions with international apiculture and data experts and discussions on the long-term prospects of SAMS will take place.



Evolutionary Development
for Sustainable
Societies (EvoS)



KARL-FRANZENS-UNIVERSITÄT GRAZ
UNIVERSITY OF GRAZ





H2020 | SAMS Project

FINAL CONFERENCE

Safe the date & [register now](#)! We invite professionals from the apiculture sector and interested individuals and beekeepers to join our SAMS Final Conference! The fully virtual event will enable stakeholders from around the world to participate in the conference:

Wednesday, Nov. 25th (8:30 to 12:30 CET)

Thursday, Nov. 26th (8:30 to 12:30 CET)



The Conference will present SAMS findings and results from Indonesia, Ethiopia and the EU. Along with these project outcomes, panel discussions with International apiculture and data experts as well as discussions on long-term prospects for SAMS cooperation and impact will round off the event. The final programme will be available soon on our website: <https://sams-project.eu/>



Annexes 3 – Program of the SAMS Conference

November 25,2020 SAMS Conference – ICT in Apiculture

Time UTC+1(GER)	Topic	Speaker
	Welcome	
08:30:00	Welcome Room	
	Input: Introduction of the SAMS Project	
09:15:00	SAMS Framework and Objectives/ Beekeeping in Ethiopia and Indonesia	Stefanie Schaedlich
09:20:00	The SAMS System	Sascha Fiedler
09:35:00	System Implementation	Amanda Manggiasih Paramita, Yosef Alemayehu, Nur Al Faizah, Kibebew Wakjira
09:45:00	Introduction of Beekeepers in Ethiopia and Indonesia	
	Q&A	
10:00:00	Q&A on the SAMS project and the SAMS System	Stefanie Schaedlich, Sascha Fiedler, Aleksejs Zacepins
	Break	
10:15:00	Coffee Break - Topic Break Rooms	
	Input: Bee Health Monitoring	
10:30:00	Bee Health Monitoring Study	Dr. Linde Morawetz
10:45:00	Environmental Data Monitoring for Bee Health, Concept of Health4Bees	Markus Bärmann
	Q&A	
11:00:00	Q&A on Bee Health Monitoring	Dr. Linde Morawetz, Markus Bärmann, Robert Brodschneider, Sascha Fiedler
	Input: SAMS - Beekeeping in different regional contexts	
11:15:00	User-Centered-Design (UCD) Concept within the SAMS Project	Amanda Manggiasih Paramita, Yosef Alemayehu, Armands Kviesis
11:30:00	The knowledge platform SAMSwiki	Kristina Gratzner
	Q&A	
11:45:00	Q&A on SAMSwiki/ UCD: Insights on beekeeping in different regional contexts	Amanda Manggiasih Paramita, Yosef Alemayehu, Armands Kviesis, Katrin Proschek
	Checkout	
12:00:00	Checkout 1st day	

November 26,2020 SAMS Conference – ICT in Apiculture

Time UTC+1(GER)	Topic	Speaker
	Welcome	
08:30:00	Welcome Room	
	Input: Bee Data Management	
09:00:00	SAMS Data Warehouse	Aleksejs Zacepins, Armands Kviesis, Vitalijs Komasilovs
09:15:00	BeeKing - your digital beekeeping assistant	Janis Kronbergs
09:30:00	BeeXML network – Standardization of Bee Data	Marten Schoonman
-	Q&A	
09:45:00	Q&A: Bee Data: What is technically possible, what is economically feasible? Which data is important for scientists?	Janis Kronbergs, Marten Schoonman, Aleksejs Zacepins, Sascha Fiedler, Armands Kviesis, Vitalijs Komasilovs
	Break	
10:00:00	Coffee-Break - Topic Break Rooms	
	Input: "Bee Policies"	
10:15:00	Policies, frameworks, cooperations within the apiculture sector in Indonesia and Ethiopia	Nur Al Faizah, Kibebew Wakjira
10:30:00	Best Practices of „Bee Policies“ in Europe	Thomas M Klotz
	Q&A	
10:45:00	Q&A on „Bee Policies“	Thomas M. Klotz, Robert Brodschneider, Nur Al Faizah, Kibebew Wakjira
	Break	
11:00:00	Coffee-Break/ Topic Break	
	Input: Businesses and Partnerships in SAMS	
11:15:00	Pitches of SAMS Businesses	
11:30:00	SAMS Business Concepts und Potentials	Nur Al Faizah, Yosef Alemayehu
11:45:00	The 3 International Partnerships in SAMS	Kibebew Wakjira, Sascha Fiedler, Robert Brodschneider
	SAMS Partnership Ceremony	
12:00:00	Live introduction of the main partners in the SAMS Partnerships and Q&A on SAMS Partnerships and SAMS Businesses	Kibebew Wakjira, Sascha Fiedler, Robert Brodschneider
12:15:00	Partnership Ceremony	
	Closing of the Conference	
12:30:00	End of SAMS Conference	

Annexes 4 – Digital conference booklet

Program

Time				Topic	Speaker
UTC+1(GER)	UTC+2 (LV)	UTC+3 (ET)	UTC+7 (ID)		
Welcome					
8:30	9:30	10:30	14:30	Check-in: <i>MS Teams main room</i>	Moderation: Magdalena Sperl, GIZ
Input: Bee Data					
9:00	10:00	11:00	15:00	SAMS Data Warehouse – how the SAMS bee data is stored and processed <i>Video on SAMS ESP8266 system</i> <i>Video on Data Warehouse</i>	<i>Aleksejs Zacepins, Armands Kvisis, Vitalijs Komasilovs,</i> Latvia University of Life Sciences and Technologies
9:15	10:15	11:15	15:15	Beekeepers' Needs of Data – BeeKing, your Digital Beekeeping Assistant <i>Video</i>	<i>Janis Kronbergs,</i> BeeKing
9:30	10:30	11:30	15:30	BeeXML network – Standardization of Bee Data <i>Video</i>	<i>Joseph Cazier,</i> BeeXML
Q&A					
9:45	10:45	11:45	15:45	Q&A on Bee Data	<i>Janis Kronbergs,</i> <i>Marten Schoonman, BeeXML</i> <i>Aleksejs Zacepins, Sascha Fiedler, Armands Kvisis, Vitalijs Komasilovs, SAMS Project</i>
Break					
10:00	11:00	12:00	16:00	Coffee-Break	

Input: "Bee Policies"					
10:15	11:15	12:15	16:15	Policies, framework, cooperations in the apicultural sector in Ethiopia and Indonesia Video Ethiopia Video Indonesia	Nur Al Faizah & Taufik G. Danuwidaja, Universitas Padjadjaran Negash Bekana, Ethiopian Apiculture Board (EAB)
10:30	11:30	12:30	16:30	Best Practices of 'Bee Policies' in Europe Video	Thomas M. Klotz, Technical University of Munich
Q&A					
10:45	11:45	12:45	16:45	Q&A on 'Bee Policies' and Frameworks	Thomas M. Klotz, Robert Brodschneider, Nur Al Faizah, Negash Bekana
Break					
11:00	12:00	13:00	17:00	Coffee-Break	
Input: SAMS Businesses					
11:15	12:15	13:15	17:15	Pitches of SAMS Businesses Video	
11:30	12:30	13:30	17:30	Business Concepts and Potential in the apicultural sector in Ethiopia, Indonesia and the EU Video Indonesia Video Ethiopia	Dr. Dwi Purnomo, Universitas Padjadjaran Yosef Alemayehu, ICEADDIS
International ICT Api Partnerships					
11:45	12:45	13:45	17:45	Live introduction of the main partners in the SAMS Partnerships and Q&A on SAMS Partnerships and SAMS Businesses • PS1: International Partnership on SAMS Business Development • PS2: International Partnership on Bee Colony Data and Knowledge Exchange • PS3: International Partnership on Apiculture Technologies and Services	Stefanie Schaedlich, GIZ Kibebew Wakjira, Holeta Sascha Kirchner, University Kassel Aleksis Zacepins, Latvia University of Life Sciences and Technologies
12:00	13:00	14:00	18:00	Partnership Ceremony Video Partnership 1 Video Partnership 2 Video Partnership 3	
12:15	13:15	14:15	18:15	The SAMS Partnership Network in Ethiopia Video	Kibebew Wakjira, Holeta
Closing of the Conference					
12:25	13:25	14:25	18:25	Conclusion of the conference	
12:30	13:30	14:30	18:30	Good Bye Words	Stefanie Schaedlich, GIZ

Project website: www.sams-project.eu

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