# Smart Apiculture Management Services

SAMS

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german cooperation
DEUTSCHE ZUSAMMENARBEIT

**BEES PLAY A KEY ROLE IN THE PRESERVATION OF OUR ECOSYSTEM, THE GLOBAL FIGHT AGAINST HUNGER AND IN ENSURING OUR EXISTENCE**

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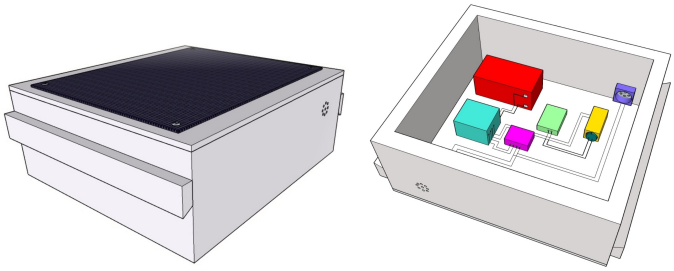
## SAMS System

- An open source technology from the EU funded project "ITApic"(ICT-AGRI-12 - FP 7), including:
  - An Apiary Sensor Unit (ASU) developed by University of Kassel
  - Decision Support System (DSS) developed by Latvia University of Life Sciences and Technologies, which will be developed further during the project



Solar Panel



Single-board Computer and Sensor

**Figure 1. Modular Beehive Sensor System**

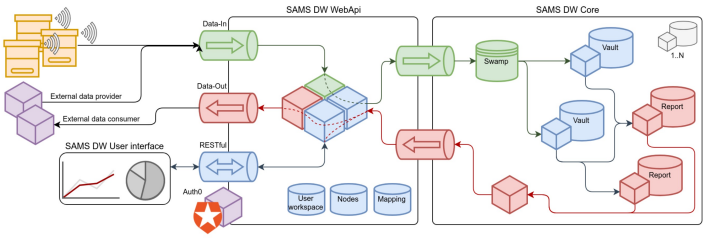



**Figure 2. Monitoring and Decision Support System (DSS) Architecture**

## Objectives

- Promote and advance forms of existing beekeeping
- Monitor bee colonies in Germany, Ethiopia and Indonesia through an open source technology
- Evaluate gained information and convert them into recommendations for beekeepers
- Overcome country-specific challenges of beekeeping and simplify the management of bee colonies
- Gain information on bee mortality

## The ICT Solutions

- Allow active monitoring and managing of bee colonies
- Ensure bee health and bee productivity
- Give answers to the requirements of beekeeping in developing countries
- Available as an open source technology

## Results

- Physical low-cost beehive model, including open source beehive sensor system
- DSS to combine the sensor-based data-outputs with other information sources and predictive models to measure, analyse and describe different states of the bee colonies such as health, vitality, production, etc.
- An automatic advisory support tool to support bee-management and to avoid losses
- Higher rate of organization of beekeepers to increase the impact
- Job creation along the whole value chain of honey

## Impact

- Higher rate of organization of beekeepers to increase impact on markets
- Interconnection with stakeholders along the value chain
- New and open trade regulations
- Developed ICT tools will make beekeeping more efficient

***Advisory Boards in Ethiopia, Indonesia and the EU support the SAMS project with their expertise***

**Figure 3-6. Various local types of beehives in Ethiopia and Indonesia**

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