ARCHIVE

Advance Remote Connected HIVE for Beekeeping

Consortium

- Easy Global Market, France
- Drompy, France
- The Institute for Beekeeping Research and Development, Romania

Sector

AGRICULTURE

Duration

14 MONTHS

Challenge

Since the late 1990s, beekeepers around the world have observed the disappearance of bees and reported unusually high rates of decline in the honeybee colonies. Each year an apiary loses 1/3 of its hives. Consequently, the Honey production dramatically decreased, divided by 4 in France for instance, while fake imported honey boomed. The main causes are climate change, pesticide use, habitat loss and parasites. Even the more, bees are responsible for pollination and this work is worth €150 billion. Therefore, ARCHIVE decided to develop an advanced electronic system to measure and prevent depopulation of bees.

DIATOMIC Support

The main support lays on the funding received from DIATOMIC which helped ARCHIVE Consortium to develop the solution and get to the market. Moreover, a good success from pitch in front of investors at Pitch to investors day organised by DIATOMIC is expected. Ultimately, all the deliverables were useful to structure the progress and adjust the strategy.

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Solution

ARCHIVE developed a product for beekeepers. It consists mainly as “an autonomous connected door” product for beehives with a main key feature to count bees and follow the potential depopulation of the hives. Furthermore, it also detects abnormal events like swarming, hornets’ attacks, thief or fall. Besides of the alerts, through the app, the beekeepers can follow its colonies data and compare it with their hives, or the hives of the other beekeepers equipped. It is cheap, autonomous for energy and plug & play with no wires or hub to set up. Prediction on health will complement the offer to monitor the beehives thanks to the Research Partners and I.A. There is no similar solution present on the market.

Lessons Learned

• We learnt that the iteration is really important on a hardware product, it can be a long process. Also, it’s important to identify where the problem is coming from (software or hardware to work efficiently)
• One challenge was to work with bees which are not active all year long. Another challenge was technical to count the bees when they are small and move in great number instantaneously queuing to go in or out.
• To overcome this, we developed test benches to observe bees’ behaviours to improve our software counting algorithms.

TRL & Adopters

TRL level at the beginning of the experiment: **4**
TRL level at the end of the experiment: **8**
Number of early/first adopters raised during the experiment: **6**

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Timeline

ARCHIVE did a 3-month design phase where the needs and requirements from beekeepers were collected, after which we entered into a 6 months development phase where a product through several iterations of Minimum Viable Products (MVP) and application development has been deployed. ARCHIVE Consortium faced many issues which are successfully exceeded. Finally, a 4 months long market phase was a chance for us to show the product to the beekeepers and get the final feedback as well as interest for the solution. Furthermore, a full preparation with all relevant information for investors has been created to get further capital and support.

Stakeholders

- Beekeepers
- Researchers in France and Romania with a one large beekeeper's association involving +25K members.

End Users

Beekeepers who want to monitor their hives and avoid the mortality (small beekeepers; professional beekeepers with the specific needs) and Scientists that need massive data from the beekeepers to complement their research.

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Key Results

- Unique system developed combining hardware and software capacities to count bees going out and coming back with sending data to the platform
- More than 20 versions tested in the laboratory
- 3 months of on-spot testing with the beekeepers
- 10 MVPs produced and tested with the beekeepers in real time conditions
- Patent under process with INPI, the French Institute on Industrial Property
- Application “Drompy” available on Android and IOS stores
- Market readiness: 150 beta-tester registered, 2000 visit on our website every week, 6 presales
- Social network followers growth (+50% per week)
- Ongoing partnership between the consortium members: Drompy will launches commercially using the platform built by EGM and integrated the researchers, Dr Eliza CUIA and Adrian Siceanu to its Board

Impact

ARCHIVE solution will have a direct impact on biodiversity. Bees have been declared “the most important animal on hearth” and classified as an endangered species. The beekeepers equipped with this solution will benefit from a unique information on the risk of depopulation of their hives. ARCHIVE solution makes the link between the research world and realities on the grounds. The researchers benefit form massive data from various situation from the equipped beekeepers. Consortium is expecting to find solutions on greener practices, in particular to save the bees but also for biodiversity in general. Our solution help beekeepers to maintain their colonies, and not buy new swarms. It will help them to make a decent living. More colonies kept alive means more adapted bees to local conditions and more genetic diversity. For European countries the stake is to be autonomous in production again, in a context of over globalization and low quality / adulterated honey.

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Testimonials

> *Beyond the journey, what interests me about you is your experience of setting up a consortium, and your product which constitutes a real innovation in my opinion with a very interesting positioning / researcher beekeepers. My experience leads me to favour this positioning. Win win, partnerships with ambitious international objectives and European funding*
> — Charles-Olivier Oudin, professional beekeeper, France

> *The idea of evaluating and monitoring flight activity can give us new biological information on the dynamics of the bee colony and its link with the environment. I really appreciate the interest and enthusiasm of the Drompy team for bees and the well-being of nature.*
> — Eliza Cauia, researcher specialized in bees at ICDA

> *We are delighted by the perspective of supporting the Drompy company which with its connected door, offers a unique product with great differentiation from current market of connected objects for beekeeping. This is a market with high stakes (market demand, Agriculture, Bio-diversity, pollination, etc.) where it is necessary to bring innovations that stick to the problems of beekeepers.*
> — Stephane Raquin, Product and Business Development Manager at Axandus

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