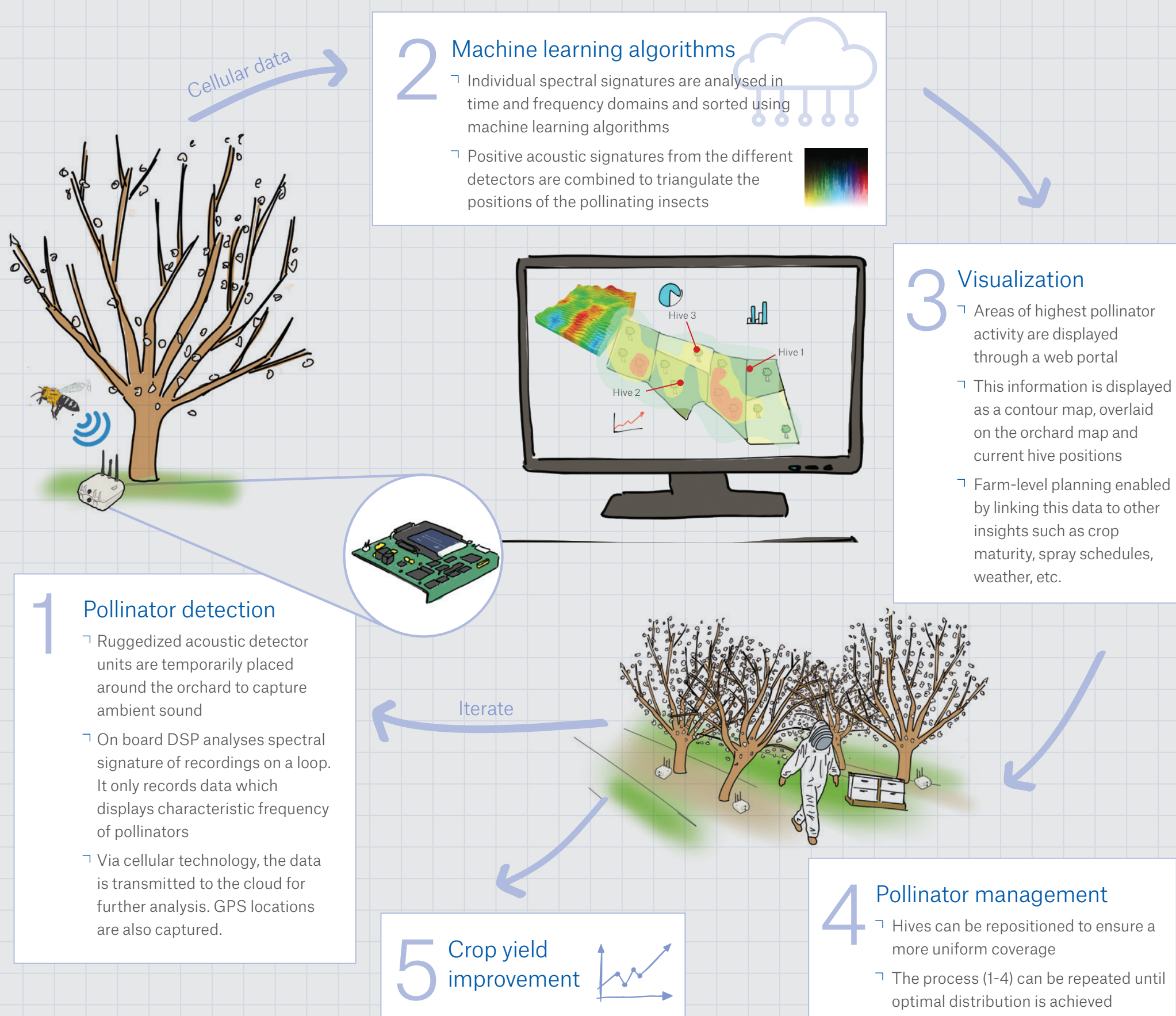


# Pollination tracking

sagentia



## Market need

While the principles of successful pollination are well understood, there is no current means to monitor the level of bee activity. Sagentia seeks to change this, by using our expertise in optical and acoustic sensor technology to track bees and map their pollination activity. In addition to tangible crop yield improvements, this would allow more efficient deployment of the bees - a high value asset trucked thousands of miles across the US between blooming orchards each year.

## Technical options

Flying insects can be uniquely identified by the characteristic frequency signatures of their wingbeats. Bee activity could be tracked via acoustic modulation or microphone arrays dispersed across an orchard with cloud-based machine learning algorithms analysing the raw data to pinpoint their position. Hives could be located for optimum results and improved residency time. An alternative would be to deploy artificial pollination techniques in areas where bee activity is lowest.

- Maintenance-free sensor design could be developed at an affordable cost point to be distributed within orchards along with an energy harvesting feature and low-power data comms
- These acoustic principles have been successfully demonstrated in a range of industrial (e.g. water meter) and medical (e.g. drug use) applications
- Alternative approaches include optical detection based on LIDAR and back scattering of light from the insect
- This solution would allow farmers and beekeepers to better manage the location of hives and their residency time. An alternative would be to deploy artificial pollination techniques in areas where bee activity is lowest
- The data could also be combined with other data sources such as crop maturity, spray schedules and weather stats for farm-level planning