

Using the Internet of Bees (IoB) as a Total System Catalyst for Sustainable Animal Welfare, Wildlife, & Environmental Conservation



Africa Animal Welfare Conference 2019

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Harnessing & conserving the sweet returns of the Honeybee



Our Problem

Insects are a very important connection to the world ecosystem and biodiversity. Most serve as pollinators for a huge variety of plants and vegetables as well as food for reptiles, birds, fish, mammals and even humans.



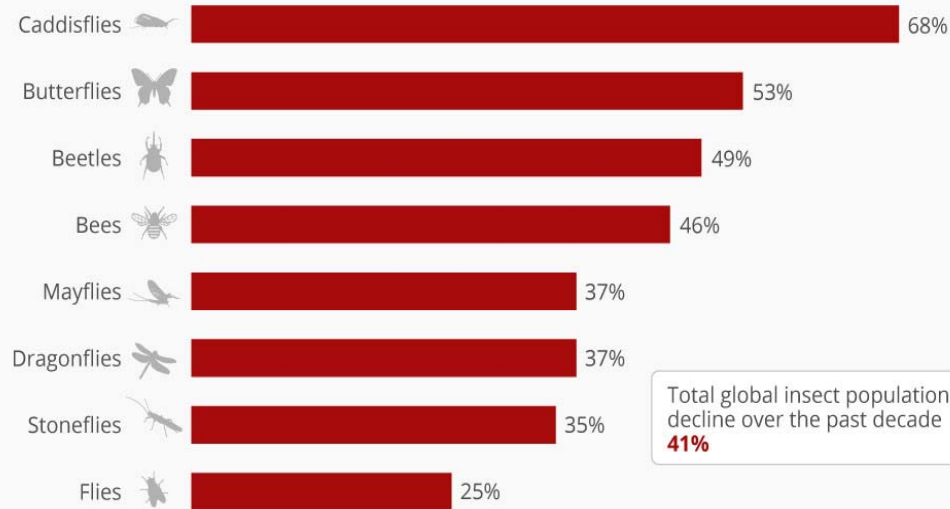
Insect declines (Insect Apocalypse) > Birds & Plants = Disrupted World's Ecosystems

**Intensive Agriculture (23.9%) | Pesticides (12.8%) | Urbanization (10.7%) | Deforestation (8.8%) |
Climate Change (5.0%) | Fertilizers (10.1%)**

Our Problem

Massive Insect Decline Threatens Collapse Of Nature

Percentage decline in selected global insect populations over the past decade



©StatistaCharts Source: Sánchez-Bayo & Wyckhuys, Biological Conservation, 2019

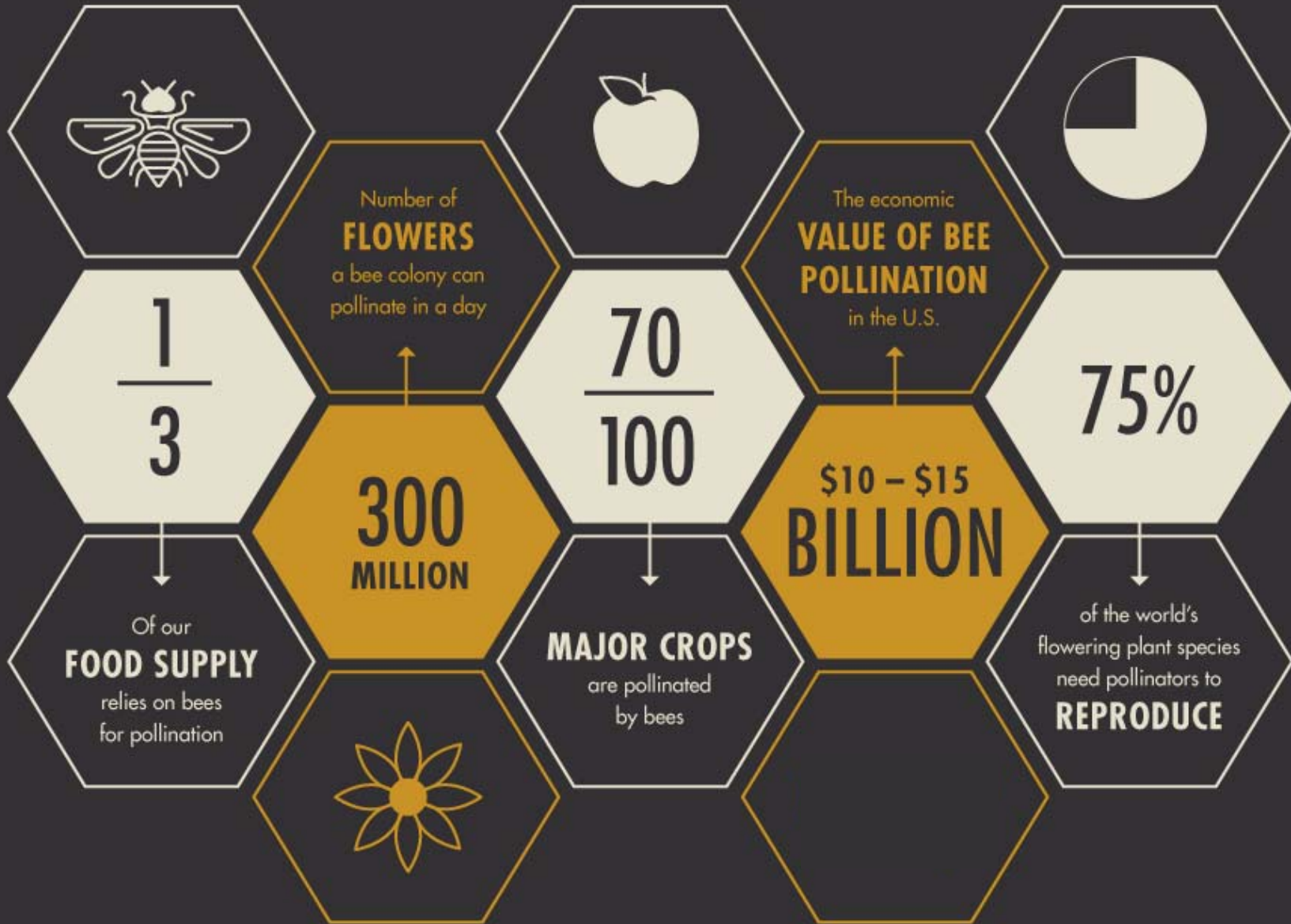
statista



HIGH URGENCY: NO BEES = No Pollination, No Plants, Fruits or Vegetables; No Animals Economic Hardships and rising food costs.

HIGH IMPORTANCE: The disappearance of the honey bees, better known as **Colony Collapse Disorder**

HIGH POTENTIAL: Greatest concern for Africa is that the statistics on the sector are not reliable nor readily available.



Honey Bee

The Market Landscape



87% Global Flowering

Pollination results into 87% of world's flowerings



77% Food Supplies

Pollination results into 77% of world's food supplies



\$235bn – \$577bn

Three quarters of the world's crops, worth \$235 – \$577 billion annually rely on pollinators.



1.4 Billion Jobs

1.4 billion jobs worldwide rely on pollinators

The Market (Uganda)

**Country's
Potential
500,000 MT**

**Propolis: USD
\$320,000**

**Royal
jelly**

**Bee
Venom**

**No. of Bee
Colonies
(???)**

**Tradable
Honey
12,000 MT**

**Tradable
Honey USD
\$38.4m**

**Bees Wax
USD \$5.2m**

Top World Exporters

China (\$271m) | New Zealand (\$270m) | Argentina (\$183m)

World Production

Africa (\$600m) est* | Ethiopia (45,000t) | Kenya (12,000t) | Egypt (12,000t) | Tanzania | Nigeria | Uganda | RSA

Top World Importers

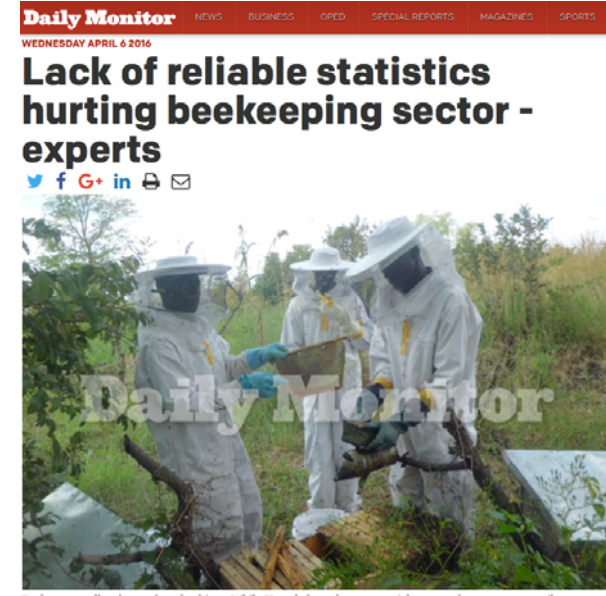
USA (\$542m) | Japan (\$143m) | Germany (\$136m)

Our Problem



Without the bees there wouldn't be fruits or vegetables *like...*

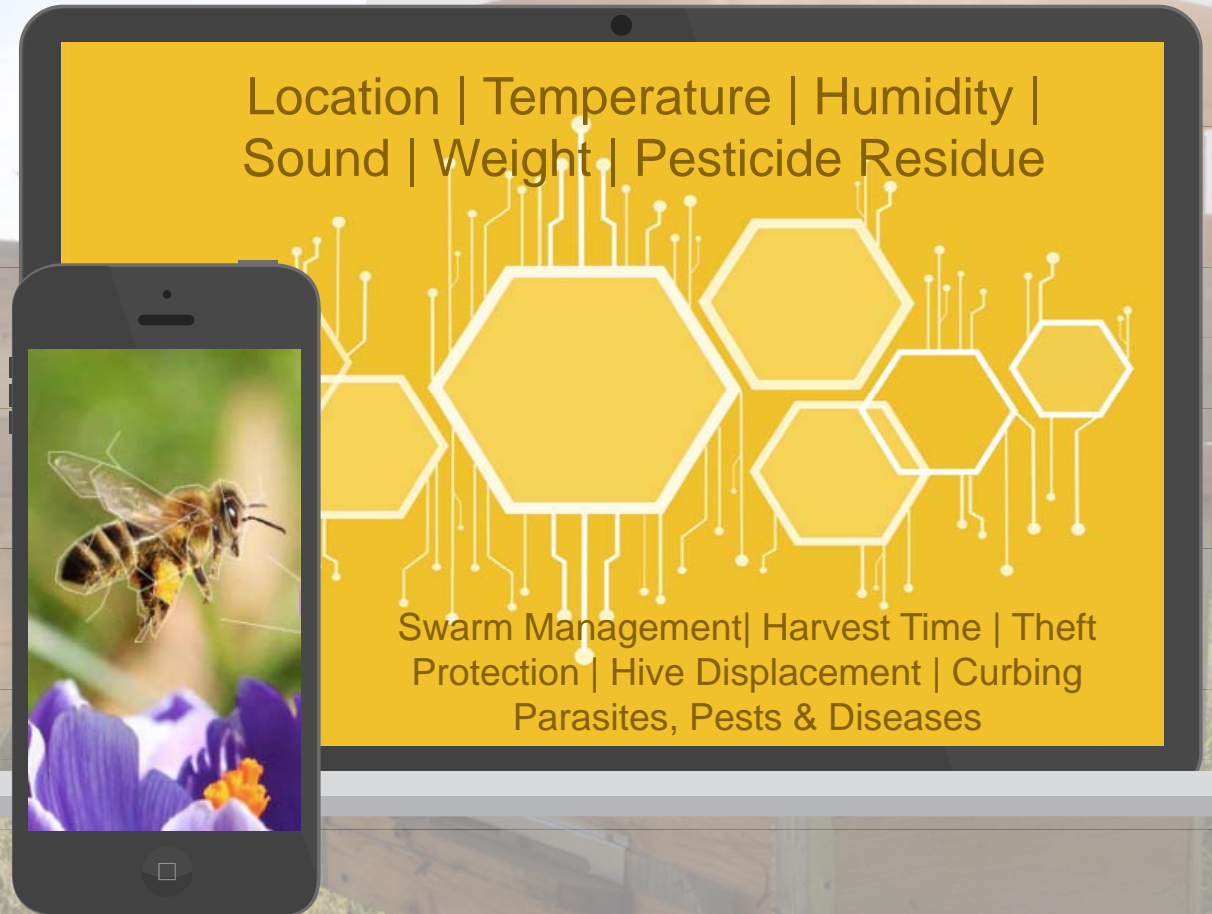
| FRUITS | VEGETABLES | FIELD CROPS |
|----------------|-------------|--------------|
| Almonds | Asparagus | Alfalfa Hay |
| Apples | Broccoli | Alfalfa Seed |
| Apricots | Carrots | Cotton Lint |
| Avocadoes | Cauliflower | Cotton Seed |
| Blueberries | Celery | Legume Seed |
| Cherries | Cucumbers | Peanuts |
| Citrus | Cantaloupe | Rapeseed |
| Cranberries | Honeydew | Soybeans |
| Grapes | Onions | Sugar Beets |
| Kiwifruit | Pumpkins | Sunflowers |
| Loganberries | Squash | |
| Macadamia nuts | Watermelons | |
| Nectarines | | |
| Olives | | |
| Peaches | | |
| Pears | | |



Our Solution



Leveraging the “Internet of Bees (IoB)”, **Bee Tracking** and **Huchi Smart Hives** we deliver **apiary management systems** and **data insights** for an **optimized apiculture value chain**. These insights will be our gateway to improving **conservation awareness** and introduction of **ImpactKeeping**.



Our Key Stakeholders

Primary Value Chain

Data Driven insights

Remote access to Hive activity, healthy hives & bee behaviour

Positive Impact on Productivity

Higher yields

Natural Pollination

33% of all the food we consume is pollinated by



Beekeeper

Developmental Partners

Conservation

Conservation Enterprise
Economic + Social Benefits

Food Security

Ecosystem Services
#FoodRevolution

Financial Inclusion

Impact to Farmers



Honey Bee

Secondary Value Chain

ImpactKeeping

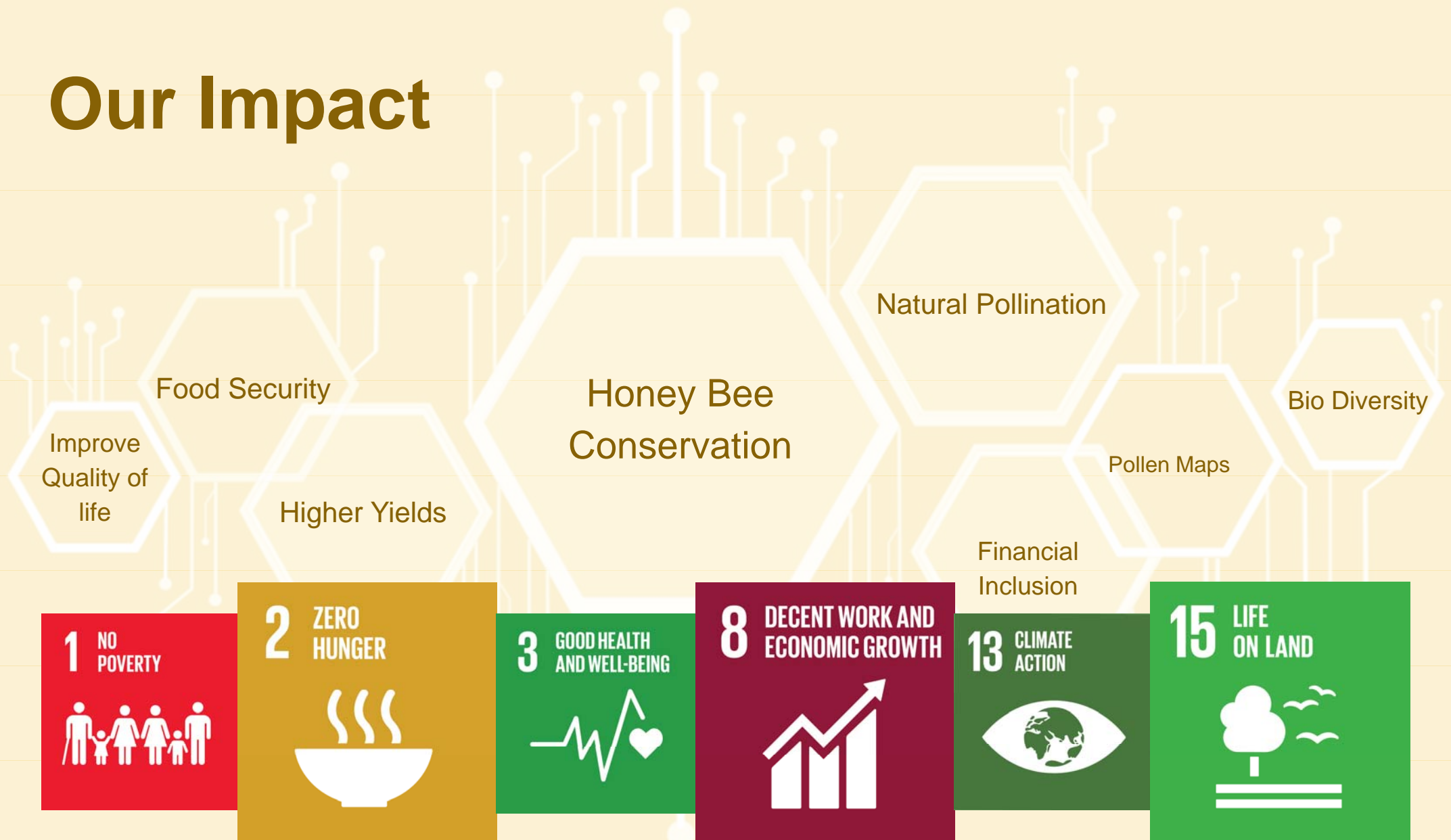
Supply chain tracking

Market Linkages



Honey

Our Impact



Our Solution Overview



Bee Behaviour + Beehive Health



Satellite



Arduino Board



GPS Module



Smart Hive

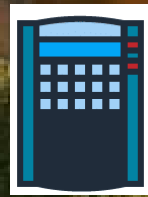


GSM Module

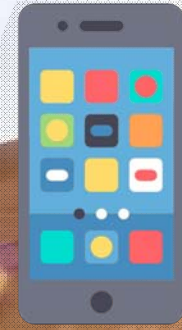


Internet

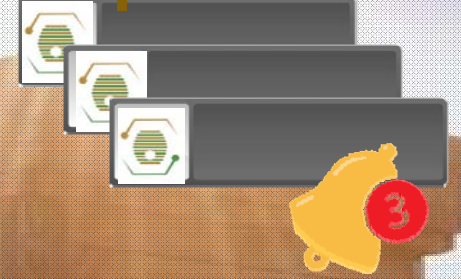
Internet



Proxy Server



User Experience

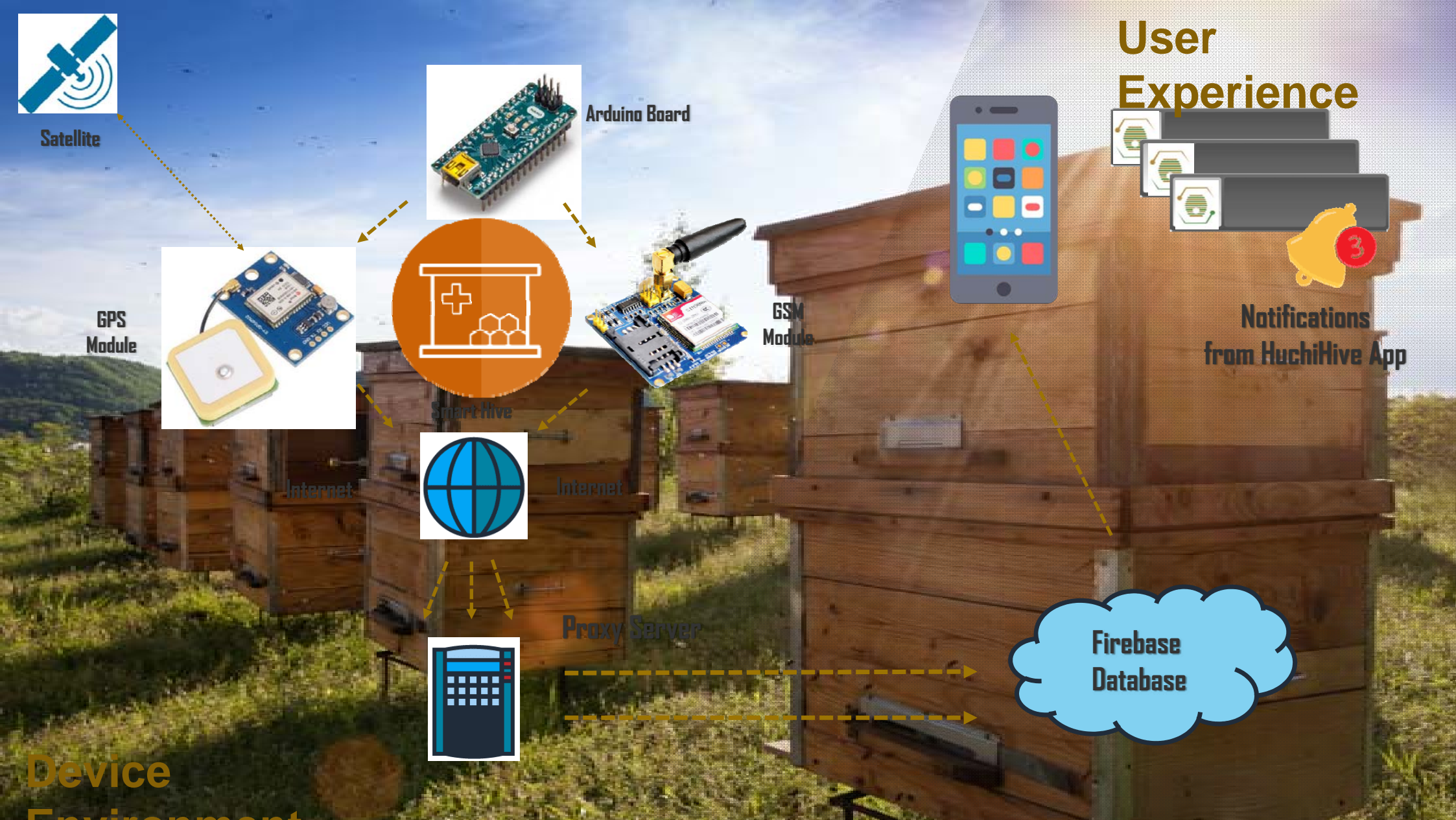


Notifications from HuchiHive App

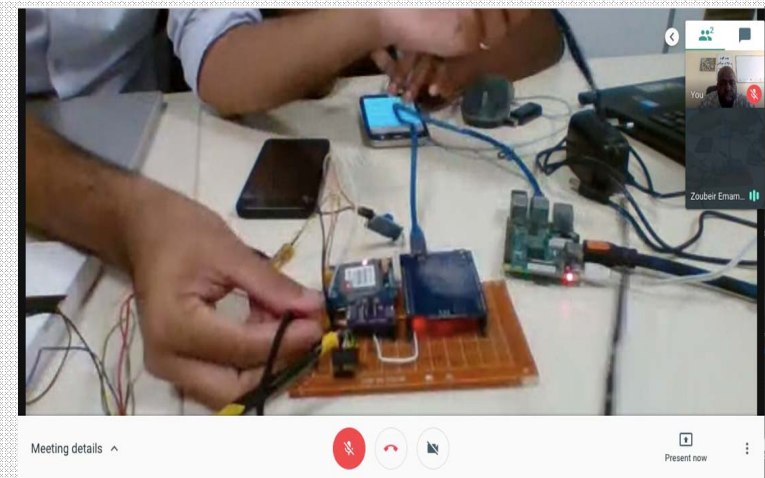
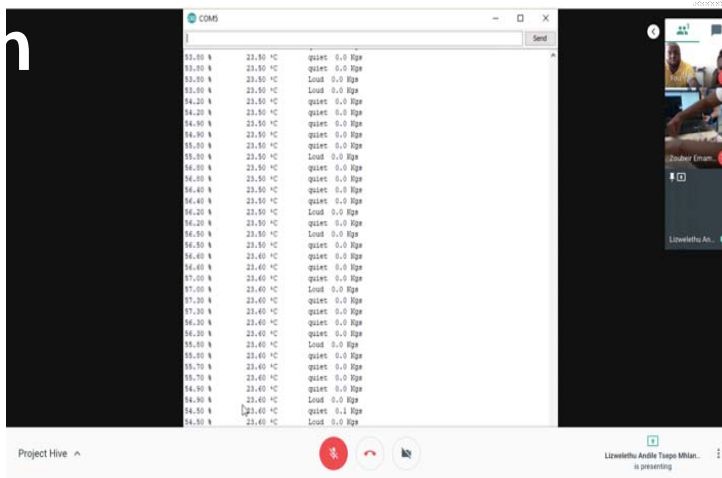
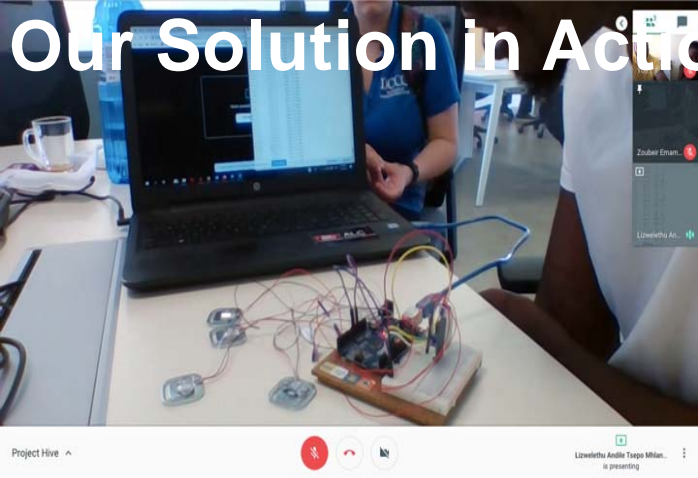


Firebase Database

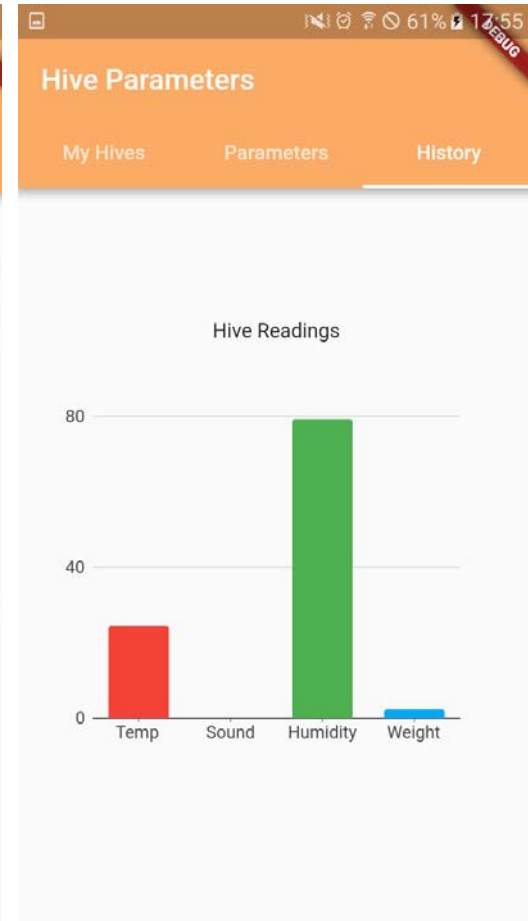
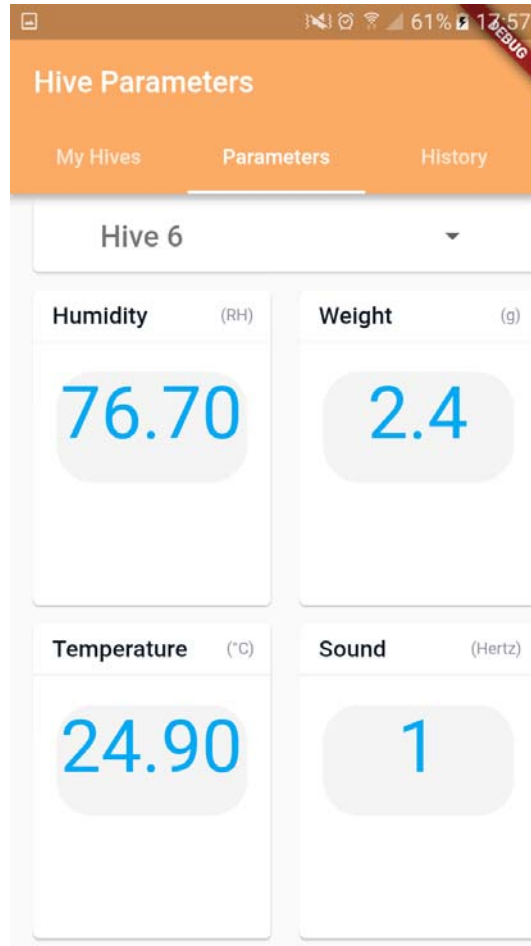
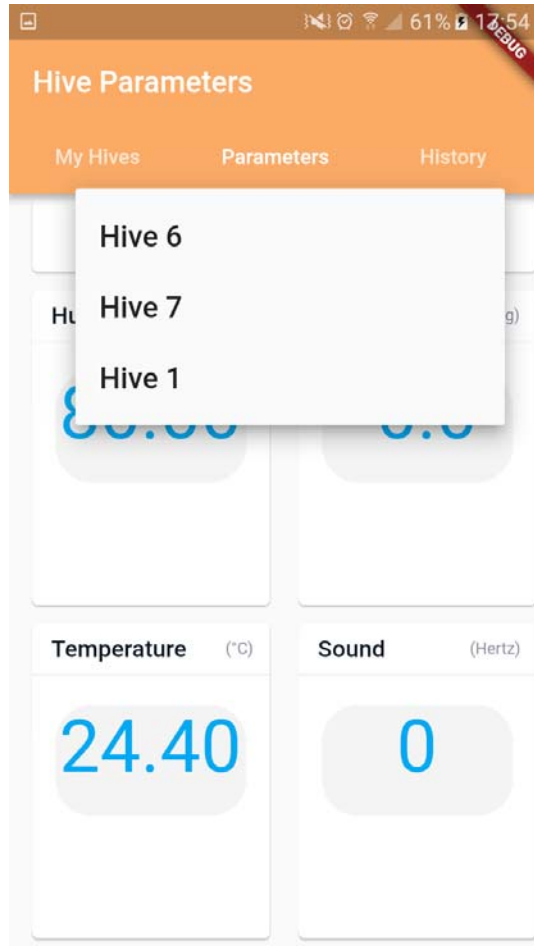
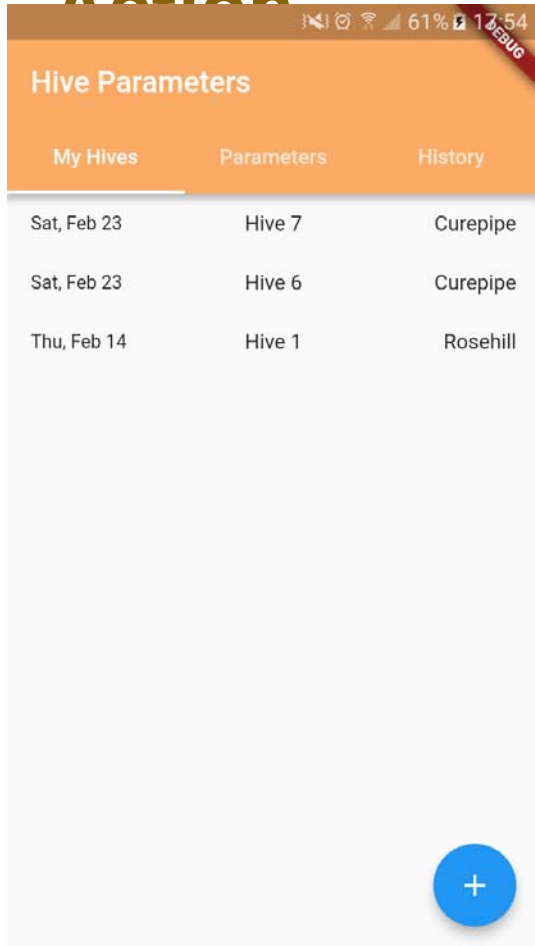
Device Environment



Our Solution in Action



Our Solution in Action



Risks & Constraints

| Cost of Solution | Connectivity | Low Adoption |
|------------------------------------|-------------------------------|---------------------------------------|
| Affordability | Power Source | Traditional Beekeeping Methods |
| Product Development | Device <> Farmer | Smart Phone Penetration |
| Development Team Resourcing | Sensors | Technology |

What Tomorrow Holds...



Pilot Phase
Launch

Partnerships

www.bees.africa

Fundraising

ImpactKeeping



**Give us a BUZZ on how you
can get involved**



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