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Sigfox &
Smart Agriculture

MAIN AREAS OF APPLICATIONS…

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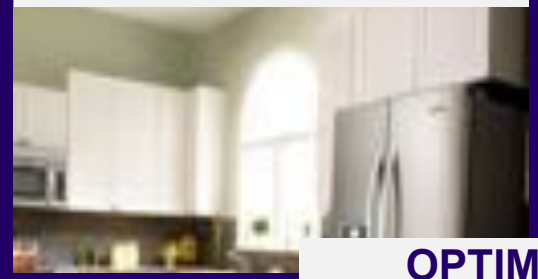
- 290 employees
- HQ in Toulouse, France
- Offices in **Munich**, Paris, Madrid, Boston, San Francisco, Singapore, Dubai
- 1.4 million km² **area** covered
- 358 million **people** covered
- 24 **countries** (nationwide covered 4 & rolled-out 20)
- > 7 million **devices**

MONITORING

CONTROL



OPTIMIZATION

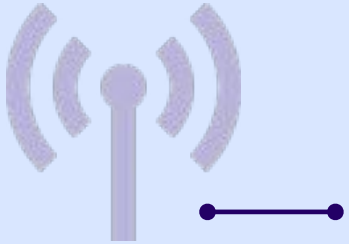
AUTONOMY

FROM SMALL MESSAGE TO SMART DATA

Object data

12-byte messages optimized for sensor data

SIGFOX network



Global Network with high capacity for the mass of objects

SIGFOX cloud

Identification and authentication Integrity and billing

Big Data Analytics Platform

Data storage and intelligence for verticals

Customer IT

Customer data

THE FUTURE OF AGRICULTURE IS CONNECTED

IT'S ESTIMATED THAT BY 2050 THE FOOD PRODUCTION WILL NEED TO INCREASE BY 70%*

Source: UN food and Agriculture Org.

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AGRICULTURE CHALLENGES TACKLED BY THE INTERNET OF THINGS

Key challenges

Productivity losses

Hidden operating costs

Non-availability of market information around prices of agricultural produce, buyers and markets

Lack of accurate weather information

Unpredicted downtime and failures of machines

Data not fully exploited and often used in silo

Hard working conditions

Too many manual steps

Information and Monitoring services

Value Added Services

Information services
- Weather
- Market information
- Field information (crop, livestock)
- Resources management
- Alert services
- Simplified decision tools

Data collection
Data aggregation
Automation

Application domains

Equipment monitoring
Precision agriculture
Irrigation management
Environment monitoring
Livestock management

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THE SMART AGRICULTUARL VALUE CHAIN

	Sensor / Device makers	Connectivity provider	Decision helping tools / GIS	Farm Management System / ERP
What SIGFOX does	• Device certification	• Builds and operates the network • Connectivity as a service	• Provides API • Certifies platform compatibility	• Provides API • Certifies platform compatibility
What SIGFOX ecosystem partners do	• Integrate SIGFOX connectivity module into their product		• Vertical specific solutions and intelligence	• Data storage • Big Data analytics

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ANTENNAS & APPLICATIONS

- LPWAN technology – low power
- ISM Band using 868MHz (similar to electrical garage door opener)
- Uses only 25milliWatt
- Best deployed free standing,
- in 30m hight
- Power supply needed, internet access either locally or via satellite

Macro BTS

Mini BTS
(rental antenna)

Macro
Antenna

Repeater
(reference design)
coming 2016

Sens‘it
(demo device)

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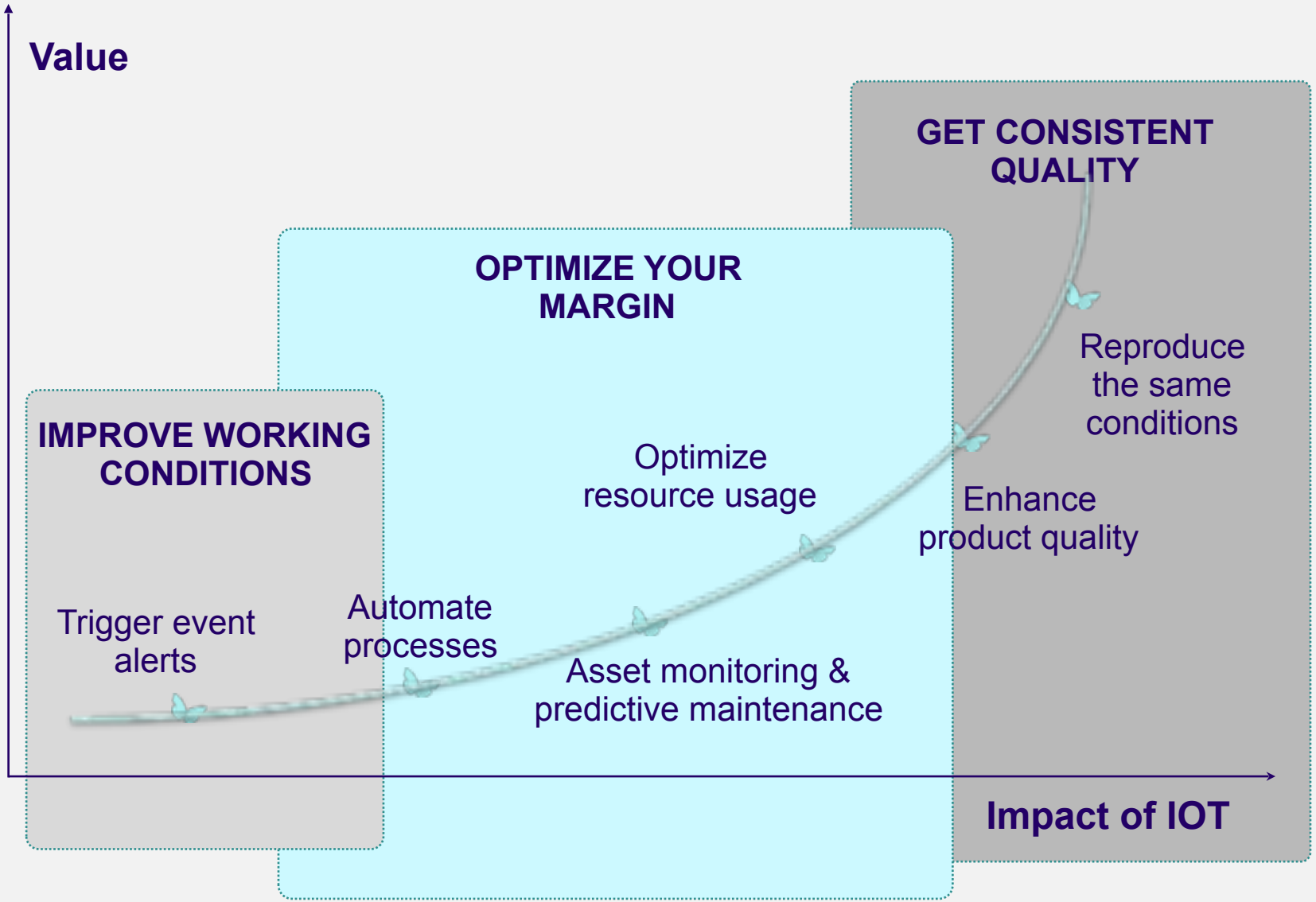
SMARTER AGRICULTURE - SIGNIFICANT ROI



- Earn more money through improved data knowledge
- Integrate the latest technology in the area
- Higher innovation capacity
- Connect and track all devices and estates

EXAMPLES OF EXISTING USE CASES

Agriculture and Farming

LIVESTOCK MANAGEMENT

Notifies when calving begins or when a cow is in heat ready for insemination

IRRIGATION MANAGEMENT

Decreases irrigation & usage of fertilizers based on soil humidity monitoring

ANIMAL TRACKING

Trigger alert when sheep are under attack thanks to a change of behavior

CROP YIELD MAXIMIZATION

Crop yield maximization thanks to sensor based data

EARLY VIRUS DETECTION

Detects potential signs of disease and minimize the risk of epidemic

EQUIPMENT MONITORING

Monitor productivity of the machines and prevent issues

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SIGFOX REFERENCES IN AGRICULTURE & ENVIRONMENT

Application	Description	Example of Customers
Irrigation management	Selective irrigation to reduce water consumption	
Crop management	Control climate conditions, fertilizers, soil conditions to maximize production	WEENAT, GreenCITYzen, Sencrop, libelium, AGRISCOPE
Wine quality enhancing	Monitoring soil moisture and trunk diameter	*Currently under certification*
Equipment monitoring	Monitor tractors, harvesters, tanks, etc. for maintenance and against theft	*Currently under certification*
Plant disease detection	Manage the productivity and quality of pastures	*Currently under certification*
Livestock management	Tracking of animals gazing or Monitoring fertility	AGUILA, Sensio Wave
Connected hive	Monitoring temperature and weight of the hive	Honeyinstruments, LABEL ABEILLE
Asset management	Detect theft, failures and risks	GreenCITYzen, ISAGRI, libelium
Weather stations	Suite of weather monitoring sensors	POUPIOU, WEENAT, Sencrop, libelium
Connected greenhouse	Monitoring conditions of the greenhouse	*Currently under certification*

FARM MANAGEMENT SYSTEMS (PLATFORMS)

WEENAT, smag Smart Agriculture, WEEPHYT, ACTA les Instituts Techniques Agricoles, OpenDataSoft, FACTORY SYSTEMES, Wonderware France

TARGET PARTNERS

Producers & Trading companies

- Farmers & Cooperatives (e.g. Vivescia, Invivo, Limagrain…)
- Wholesalers/Traders (e.g. Negoce Expansion,….)

Industrials & Services

- Agrichemicals companies (e.g. Monsanto, Bayer, BASF…)
- Tractors, Machineries manufacturers (e.g. John Deere…)
- Sensors & Devices makers
- Food Processing companies (e.g. Bonduelle, Ducy, …)
- Insurance companies (e.g. Camca, Aviva …)

Enablers

- Platforms & Software companies (e.g. Smag, Isagri…)
- Private & Public Agricultural associations (e.g. EIP, INRA,….)

LIVESTOCK MANAGEMENT

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Track your assets at low cost

AGUILA TECHNOLOGIES

OBJECTIVE

Aguila technologies aimed at making the smallest possible tracker in order to target specific applications that have form factor constraints such as Livestock management, lost pets tracking, anti-theft protection for luxury goods, fleet management, supply chain, etc.

SOLUTION

The tracker reports its GPS position regularly when motion is detected, enabling the battery to be saved as much as possible. In case, the tracker goes outside of the coverage range, it stores the positions onto its internal memory until it goes back to a covered area.

BENEFITS

- **Small size electronics needed to connect to SIGFOX network**
- **Mass of 34 grams, size of 44 * 40 * 17mm**
- **Long lasting battery of 20 months with GPS**
- **Low cost device**
- **Global mobility capabilities**
- **Accuracy of 3 meters**

SMART IRRIGATION

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Save water resources

YZATEC

OBJECTIVE

Detect leaks and water waste

BENEFITS

- **More accurate irrigation water metering reducing operating costs**
- **Highly reliable metering**
- **Real time water management**
- **Efficient global management of irrigation network**

SOLUTIONS

Y-RIG is an ultrasonic irrigation water meter, with wireless capabilities in a robust and cost efficient design.

The Y-RIG 100 is designed for large flow management in agriculture and irrigation applications.

- DN 100
- Flange type mechanical interfaces
- Nominal flow rate: 105 m3/h
- Max pressure: 16 bars
- Pressure loss: 0,1 bar at Q3
- IP 68

The Y-RIG 65 has been designed for irrigation applications. Its robust design allows to sustain outdoor highly demanding environments and agriculture typical usage conditions.

- DN 65
- Flange type mechanical interfaces
- Nominal flow rate: 63 m3/h
- Max pressure: PN16
- Pressure loss: 0,1 bar at Q3
- No mechanical movement
- Aluminium case

PRECISION AGRICULTURE

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Irrigate with the right amount at the right time

GreenCityzen
Connect the environment

PROBLEM

Irrigation & usage of fertilizers are based on the intuition of the farmer and represent a big part of its operating costs

SOLUTION

The Hummbox helps monitoring and managing rainwater, soil conditions and irrigate smartly.

- Soil Moisture (accuracy <2%, resolution: 1%)
- Instant measure button
- Ground and air temperature resolution 0.1°C
- Up to 10 years autonomy
- Waterproof box and sensor (IP67)
- Sensor wire (0.5m to 3m)
- Size 115 x 65 x 55 cm

BENEFITS

- **Save water resources**
- **Decrease operating cost by using no more water and fertilizers than what is actually needed**
- **Micromanagement of the parcel**
- **Improve production quantity and quality**

ASSET MANAGEMENT

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Automate your supply chain management

GreenCITYzen
Connect the environment

OBJECTIVE

Anticipate supply needs

SOLUTION

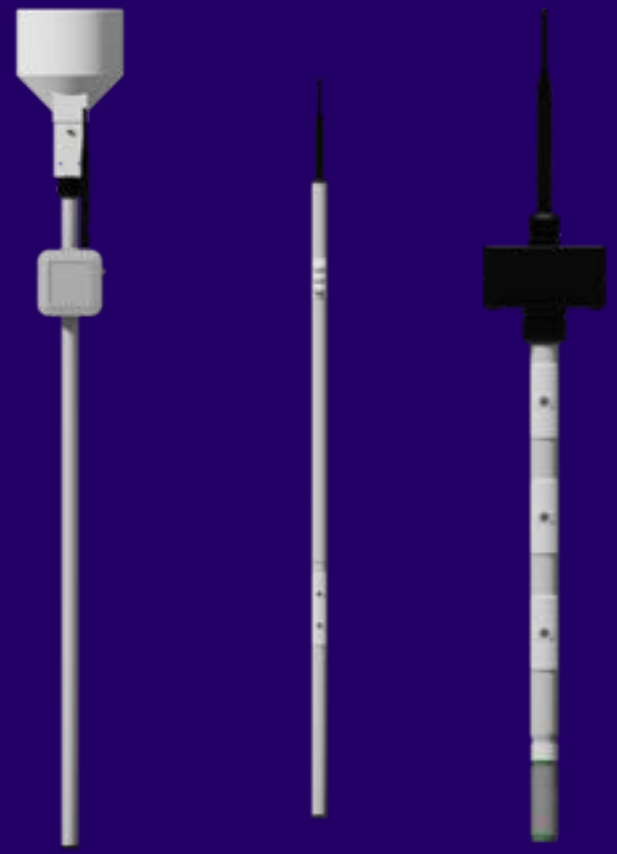
The Hummbox - ultrasonic helps you measure the level of liquid in your tank or trash

- Measures level & distance in your tank
- Max distance 655cm; resolution 1cm
- Ambient temperature; precision 1%
- Instant measure push button
- Up to 10 years of battery life
- Waterproof
- Size 115 x 65 x 55cm; weight 200g
- Web & mobile app interfaces

BENEFITS

- **Precise Measurements**
- **Alert notifications for refill or pick-up**
- **Fleet dashboard to ease the management**
- **Interoperable with external data flows such as weather forecasts**

CROP MANAGEMENT



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Optimize time and resources

WEENAT

PROBLEM

Farmers are wasting or not using enough resources (water, pesticides, …)

SOLUTIONS

Weenat offers connected sensors that collect meteorological and field data so that farmers perform the right actions at the right time and use the appropriate amount of resources

BENEFITS

- **Easy to use**
- **Autonomous**
- **Real-time: tens of daily measurements accessible 24/7**
- **Robust & water-proof devices to resist to outdoor conditions**
- **Optimize farmer’s time**
- **Save resources**

CONNECTED HIVE

Optimize your production

Optibee

OBJECTIVE

- Automate and optimize the culture of honey

SOLUTION

- It allows beekeepers to help manage their apiaries, secure and optimize livestock movements with a very precise monitoring of the conditions of the apiaries.
- Optibee measures and continuously transmits the weight of the hive, the hive temperature and autonomy of the system.

BENEFITS

- **2 years battery life with near real-time monitoring if the apiaries**
- **Optimization of the revenues thanks to precise monitoring**
- **Possibility to stop the connectivity in case of theft making the device unusable**

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WEATHER STATION

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Get accurate and local weather information

MéTéus Tout le temps avec vous

ISAGRI

PROBLEM

Weather information is often inaccurate and given for wide areas while farmers need it specifically for their parcels

SOLUTION

Measurements in near-real time of

- Temperature,
- humidity
- Wind
- Rain accumulation

Ability this data link it to historical ones in order to develop predictive algorithms.

Alerts to farmer based on the potential risk of disease detected

BENEFITS

- **Accurate and personalized weather data**
- **Alert based notifications**

YOUR NEXT STEPS

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1

THINK OF THE INFORMATION YOU WOULD NEED FOR BETTER RESULTS

2

DEFINE USE CASE AND THE PROJECTS YOU WOULD USE

3

SPEAK TO ONE US FOR HELP – WE HAVE THE INFOMRATION ON THE ANTENNA AND DEVICES

4

IMPLEMENT AND PROFIT FROM THE NEW POSIBILITIES OF THE IOT

Thank you for your attention

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