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Multi-Hazard Early Warning Systems and Role of ICTs
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From 205 to 2017, SES run **SATLAS**, a co-funded project under European Space Agency Advanced Research in Telecommunications Systems (ARTES) program.

SATLAS was an incubator for developing SATCOM applications. Its target market was EMEA, **with a focus on Middle East and Africa**.

SATLAS helped Innovators develop a commercially sustainable proof of concept that required Satellite Communications.

One of SATLAS alumni is Chipsafer. Chipsafer is a start-up founded by Victoria Alonsoperez, whose objective is to use **ICT technology** for autonomous monitoring and tracking of cattle.

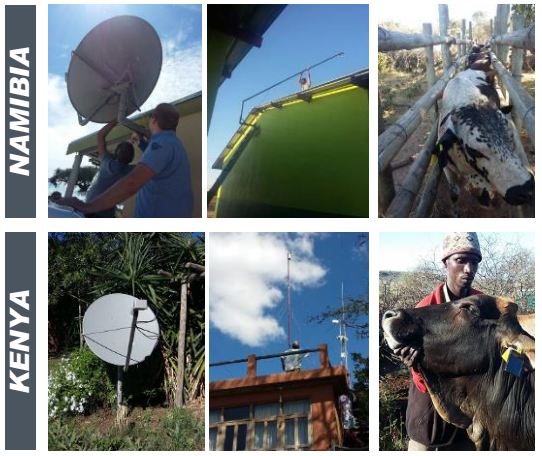
Alonsoperez founded Chipsafer after experiencing the **social and economic impact** of the 2001 Foot & Mouth (FMD) outbreak in Uruguay.

During SATLAS, Chipsafer executed one pilot in Namibia, and a second one in Kenya.

Each pilot required a combination of satellite connectivity, deployed by SES, and an on-the-ground, LoRa based, IoT network, deployed by SODAQ.

Both pilots were executed in collaboration of local farmers who suffer cattle losses from disease and theft

Both pilots helped Chipsafer re-iterate their idea and test, on the field, the combination of satellite communications with IoT.



Chipsafer's mission: "improve the safety & security of cattle herds, while reducing ranchers' environmental impact and providing traceability across the bovine lifecycle

Parasites in cattle populations lead to stunted growth & death.

Brucellosis in cattle populations causes abortion, premature calving, and sterility in infected animals.

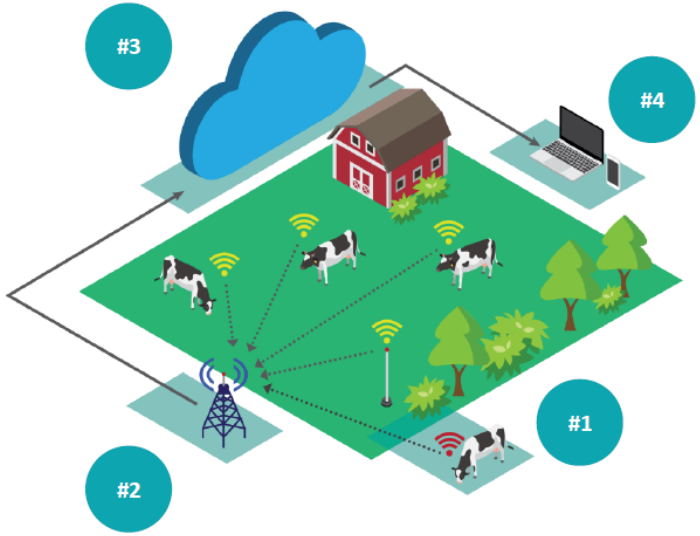
Foot and Mouth Disease is extremely contagious and spreads rapidly in cattle populations.

In brief, cattle outbreaks generate billions in losses around the globe, specially in developing countries.

Chipsafer addresses this problem through its solution, deploying LoRa sensors that generate and communicate data on body movement, local humidity, and geolocation.

Proprietary algorithms provide real-time data analysis, aggregation, anomaly tracking, and mobile alerting.

When algorithms detect anomalous behavior that is correlated to a disease, the platform immediately communicates the farmer, so he can take immediate action, to avoid outbreak.



#1) Embedded Sensors for Geolocation and Monitoring
#2) LoRa Enabled Gateway Relays Data to Cloud
#3) Cloud-based Software Tracks Anomalies & Sends Alerts
#4) Web-based Portal for Data Analysis and Aggregation

Source: Chipsafer

At the time of writing, Chipsafer has run additional pilots in Brazil, Uruguay, Netherlands and Australia, and is currently re-iterating its value proposition with additional capabilities such as new and better sensors, and the integration of remote sensing imagery. Commercial launch is expected by Q4 2018 . For more information, visit www.chipsafer.com

Standalone flood monitoring solution saves lives

- **Problem: Several regions in southeast Asia are vulnerable to natural disasters such as floods, tsunamis, earthquakes**
- Monitoring enables early warning to prevent a natural disaster from turning into a humanitarian crisis
- Terrestrial communications are vulnerable damage
- Concern that simple level monitors may be ignored as faulty, and want visual cross-check to confirm emergency
- Existing technology required a hut for data logger, susceptible to flood
  - **Solution: BGAN-M2M**
- Standalone solution on a single pole, higher than surge level
- Full remote control, without dependence on cell towers
- Typical usage: 20 MB
- ROI: safety, reduced humanitarian cost

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BGAN-M2M and IDP working together

- **Problem: Thailand has significant risk of Tsunamis**
  - Safety of life is the primary concern
  - Advance notification allows people to evacuate and saves lives
- **Solution: BGAN M2M monitors sensors in real time and IDP triggers alert horns**
  - Water radar level sensors are use to detect rapid changes in sea level that predict oncoming Tsunami
  - BGAN M2M data use: 10-20MB
  - When a Tsunami is detected, IDP delivers an alert via horns placed throughout country to warn people to evacuate
- IDP data use: < 0.5 KB + broadcast
- The DART in Ecuador system
- Bottom Pressure Sensors each one communicates with an acoustic data link to a surface buoy on the plaques movement
- The surface buoy has a satellite terminal to send to the monitoring center

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Thank you

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