EARTHQUAKE EARLY WARNING SYSTEM USING ANIMALS

PROJECT: IOT PROTOTYPE CHALLENGE

COURSE: TOUCH IOT WITH SAP LEONARDO JUNE 2017

BUILD - Master Detail link: https://sap.build.me/prototype-editors/api/public/v1/snapshots/9ba7d3354a9c3c150e1a9fe7/artifacts/latest/index.html#/sheep

BUILD - Launchpad Link: https://sap.build.me/prototype-editors/api/public/v1/snapshots/78cc16902f6156920e16850c/artifacts/latest/index.html#/launch_page

Youtube Link: https://youtu.be/2H91GYck9Do

IOT Prototype Challenge submission as part of the openSAP course “Touch IoT with SAP Leonardo.”
I recently read an online article about a scientific researcher in Germany who is working on the theory: That animals can anticipate natural disasters? The scientist involved is Dr Martin Wikelski and he tagged animals in early 2017 on the Angeli farm in Pieve Torina region of Italy where there were several earthquakes last year and where scientists believe more earthquakes will occur.

Pieve Torina is located near the site of the October 26, 2016 earthquake.

Environmental scientists have already been looking at physical changes in the ground such as measuring strain rates in rocks, looking for changes in electrical signals from rocks, and examining alterations in the behavior of ground water, searching for chemical or thermal anomalies in a region, or analyzing electromagnetic variations but none of these have been conclusive, so investigating and observing animal behavior is just another option in seeing if there is something in the environment that help scientists predict earthquakes.

I decided to design a IoT project that would help Dr Wikelski discover if animals were indeed a possible prediction source for natural disasters such as earthquakes.

Point of View (PoV)

As a farmer, I want to use the IoT animal sensor technology because it might help save the lives of people in my neighborhood and as a by-product because it will help me to be a better farmer.
Persona - Farmer

Sergio Dogliani
Farmer

To look after farm livestock and make a living as a small farmer

About

- 50 year old sole farmer on small hillside farm (100 acres)
- Technology savvy – uses iPhone and iPad to communicate with family members and manage farm finances.
- Mostly livestock farming – small amount of arable farming
- Farm is mostly mountainous
- Family reared and left home
- Loves his outdoor life

Responsibilities

- Look after farm animals
- To sow crops and harvest them
- Make a sustainable profit
- To look after himself as farm depends of his well-being
- To actively participate in research
- To accurately and reliable engage with research technology to best of his knowledge

Main Goals

- To accurately use technology to monitor
- To be a reliable point of contact for research project
- To be key player in saving his neighbor’s lives

Needs

- To regularly check on animals for their welfare
- To feed animals
- To keep them safe and fenced in
- To get medical assistance when sick
- To make a profit from farm

Pain Points

- Loss of livestock due to ill health
- Loss of livestock due to predators or theft
- Loss of livestock profitability due to poor animal management
- New to IoT technology
<table>
<thead>
<tr>
<th>ACTIONS</th>
<th>View animal alert: Temperature, Heart rate, Speed, Altitude, Out of boundary</th>
<th>View animal’s medical details and alerts</th>
<th>View animal’s location on map</th>
<th>Go and check up on animal and sort animal if animal is in distress or otherwise</th>
<th>Input outcome of alert and findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>MINDSET</td>
<td>Worried. These animals are valuable and I cannot afford to lose any one of them.</td>
<td>I need to be careful when I am looking over animal’s medical history not to miss anything important. I better check on animal and check if it is happening to other animals too.</td>
<td>Is animal alone or with other animals. I wonder why animal is there or experiencing this. I hope animal will be okay until I get to him/her.</td>
<td>Will I be able to treat animal myself or do I need to get a vet.</td>
<td>I should accurately record outcome of alert so researchers have valid data to review.</td>
</tr>
<tr>
<td>FEELING</td>
<td>TOUCH POINTS</td>
<td>Sensors, IoT app</td>
<td>Collection of animal sensors, IoT animal reports</td>
<td>All farm animal sensors, IoT map</td>
<td>Animal, farm pens, path, sheds, Phone, email and vet.</td>
</tr>
</tbody>
</table>

**User Experience Journey - Farmer**
Master Detail

Sheep 023
- Age: 3.3 years
- Temperature: 100.9°C
- Alerts: 1

Sheep 057
- Age: 3.1 years
- Temperature: 101.2°C
- Alerts: 3

Sheep 078
- Age: 2.5 years
- Temperature: 103.0°C
- Alerts: 0

Sheep 120
- Age: 1.1 years
- Temperature: 102.4°C
- Alerts: 2

Sheep 143
- Age: 0.8 years
- Temperature: 105.0°C
- Alerts: 0

Sheep 176
- Age: 0.8 years
- Temperature: 102.2°C
- Alerts: 3

Sheep 197
- Age: 0.5 years
- Temperature: 102.3°C
- Alerts: 3

Alert: Very high heart rate
Resolution: Needs medical attention - vet called
Comments: Pain in fence, sheep trapped and hurt leg
Severity: 3
Status: In Progress

Alert: Heart rate elevated for 1 hour.
Phoned farm hand to go and see why heart rate elevated.
Today at 12:58 AM
Thorn in foot which went causing it pain.
Processed 6.

Received invoice for dipping
Yesterday at 11:14 PM
Invoice: 6,99 Euros
Open

Name 1 increased the probability from 20% to 30%.
Two days ago at 02:34 PM

Phoned farm hand to bring animal down to sheep pen no 2.
Two days ago at 12:56 AM

Action: Check sheep's location