Silent Herdsman®:
A Scalable Approach to Heat Detection

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ETS®

EMBEDDED TECHNOLOGY SOLUTIONS

Outline

- **Background**

- **Silent Herdsman Platform** ®

- **Scalability**
  - Number of Base Stations
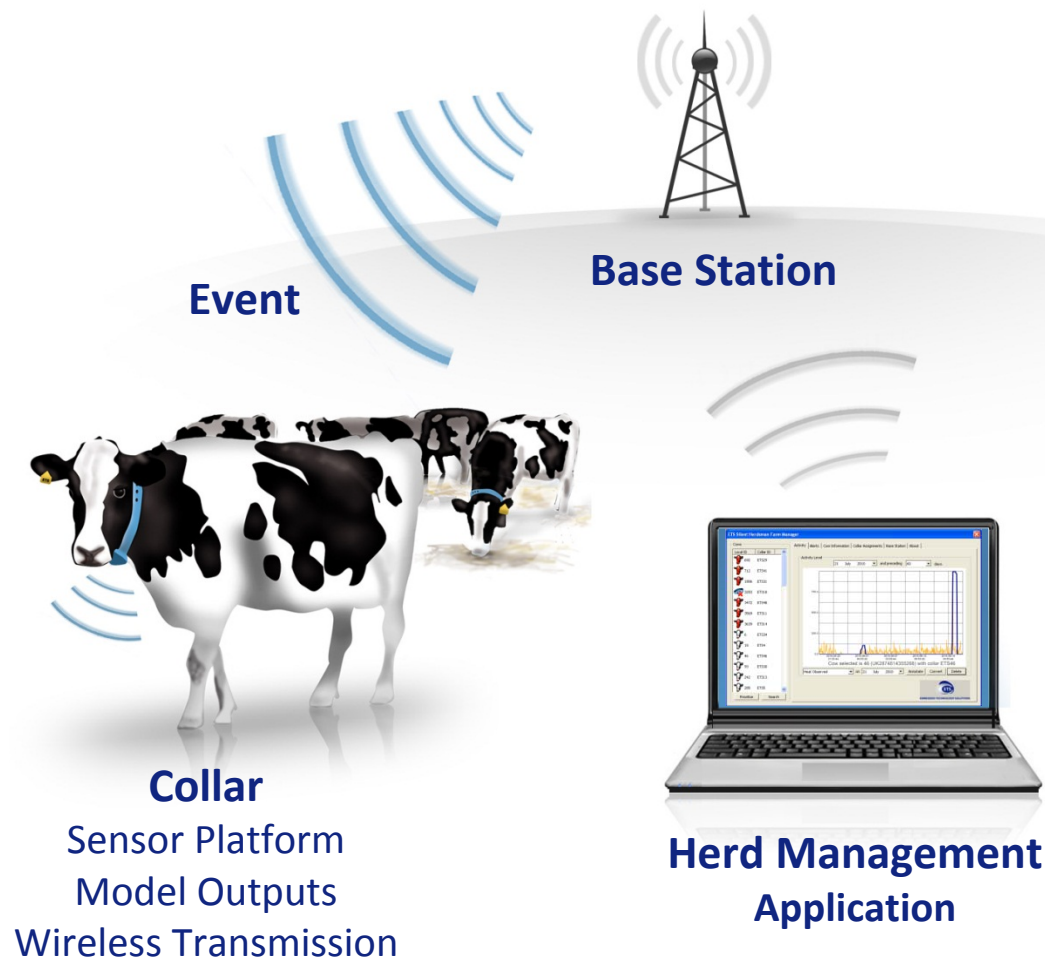 - Multiple Farm Locations

- **Remote Access**

- **Conclusions**

Silent Herdsman™

Background

- **Precision Livestock Farming (PLF) is core to satisfying the increasing world-wide demand for animal products of good quality whilst heavily reducing environmental load and resource use**

- **throughout the world, farming concerns are becoming larger to remain profitable and/or the cost of skilled labour is increasing**

- **technology is used in many different ways within animal production focusing the valuable time of animal husbandry staff onto those animals that most require attention**

- **animal wellbeing is at the start of a chain that links to farmer profitability, product quality, consumer satisfaction and environmental sustainability**

- **the Silent Herdsman® is the basis for a highly scalable and highly functional decision support platform that assists in securing a sustainable food supply internationally**

The *Silent Herdsman®* Platform

Event

Base Station

Collar
Sensor Platform
Model Outputs
Wireless Transmission

Herd Management
Application

Inter-Herd DB UK
National DB
Global DB

Alert GUI, SMS,
GSM, Internet

Silent Herdsman™

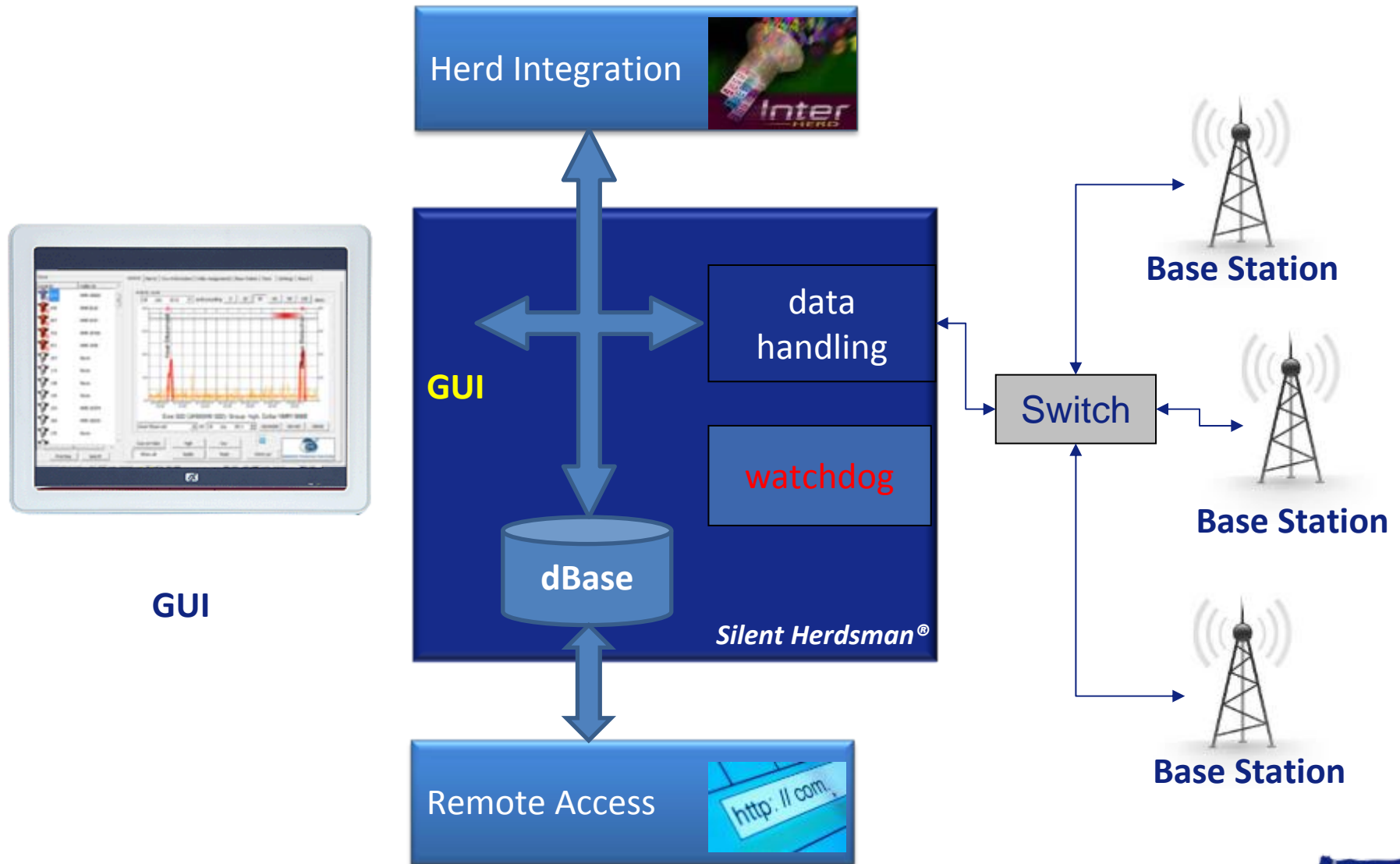# The Silent Herdsman® Smart Collar

Location for collar sensor
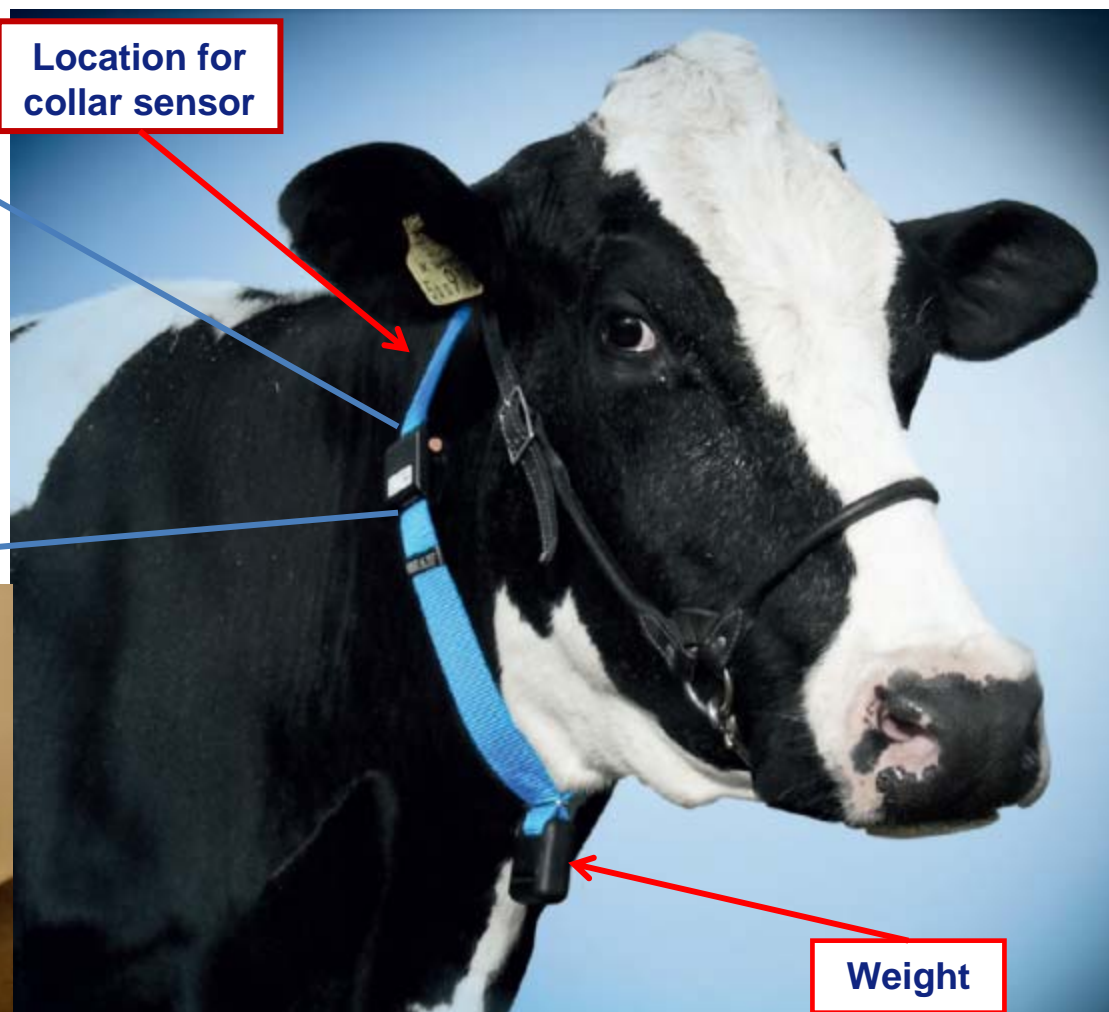
Weight

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The *Silent Herdsman®* Platform; Scalability

Multiple Farm Locations

Wireless Relay between locations

COLLECTING YARD

ETS BASE STATION 1

Silent Herdsman Software

ETS Base Station 2

Milking Parlour

Office with Silent Herdsman

Decision Making Data Posted
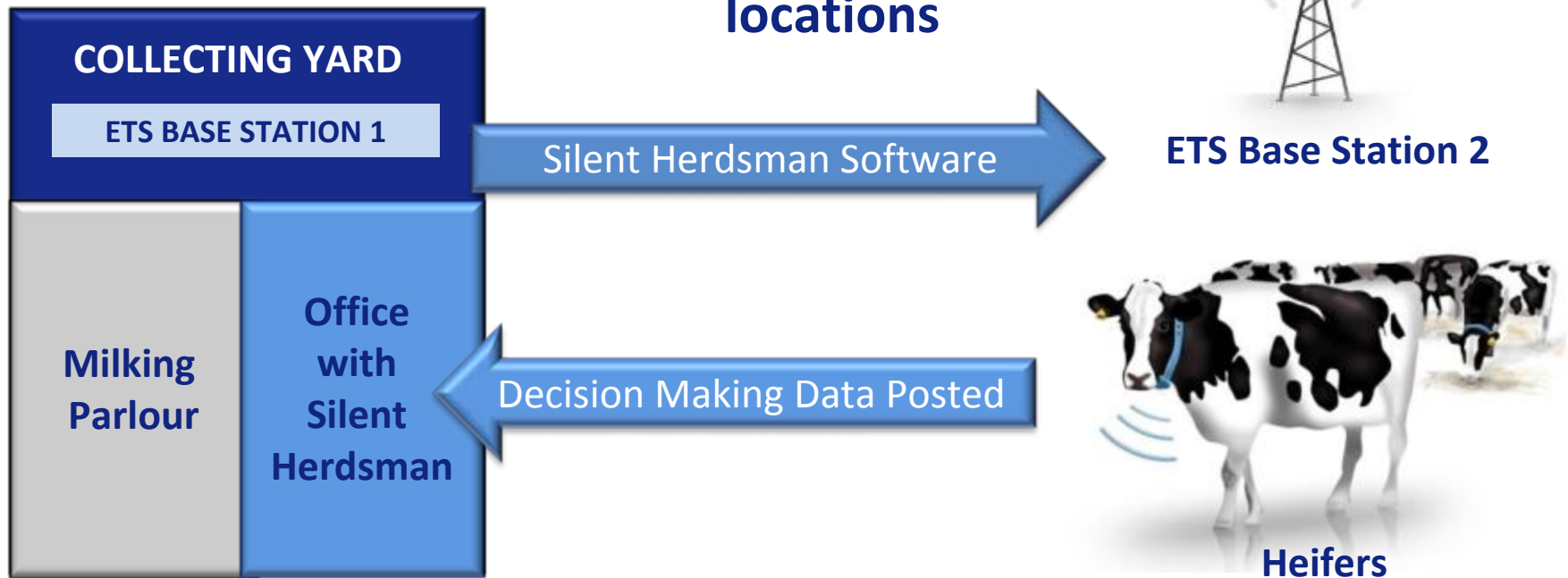
Heifers

Farmers able to monitor remotely housed heifers using a Silent Herdsman relay base station

ETS

EMBEDDED TECHNOLOGY SOLUTIONS

Silent Herdsman™

Between Base Stations; Wireless Relay Links

- **replaces physical cabling to connect between buildings and extend the range between Base Stations**
  - **avoids digging up yard**
  - **avoids overhead cables**

- **facilitates wider range of farm environments**
  - **across roads**
  - **remote sheds**
  - **increased distance from PC**

- **1.5k metres maximum line-of-sight range**

Example Farm
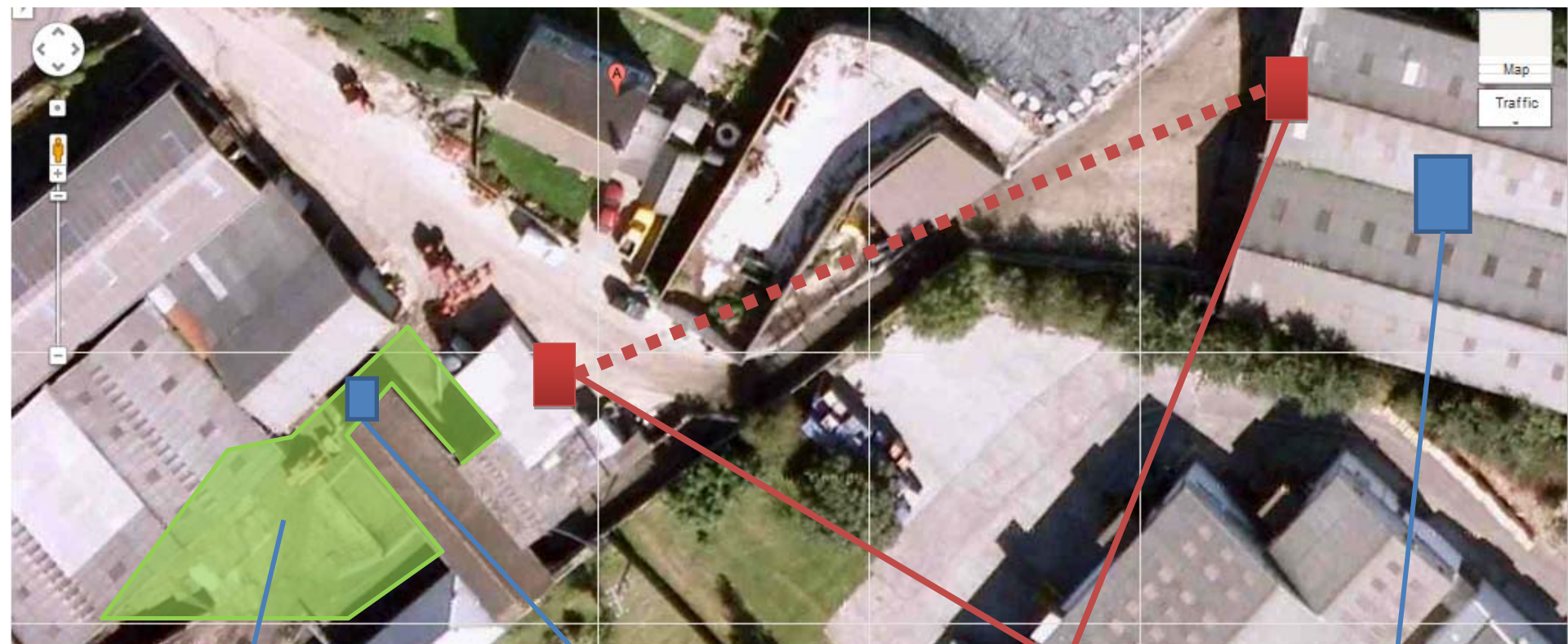
Area to be covered by local base station

High Gain Outdoor Antenna

Wireless Relay Link

2nd Base Station

Middle of Shed for good coverage, and not conflict with other base station

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Remote Access

- **Broadband Bridge**
  - **1.5km Line-of-Sight**

- On-Farm WiFi
  - ½ Broadband Bridge

- **wireless link between the farm house Internet Access and the Silent Herdsman PC enabling remote support and access**
  - *Wireless Access Point*
    - **Connected to the broadband router**
  - *Wireless Client Router*
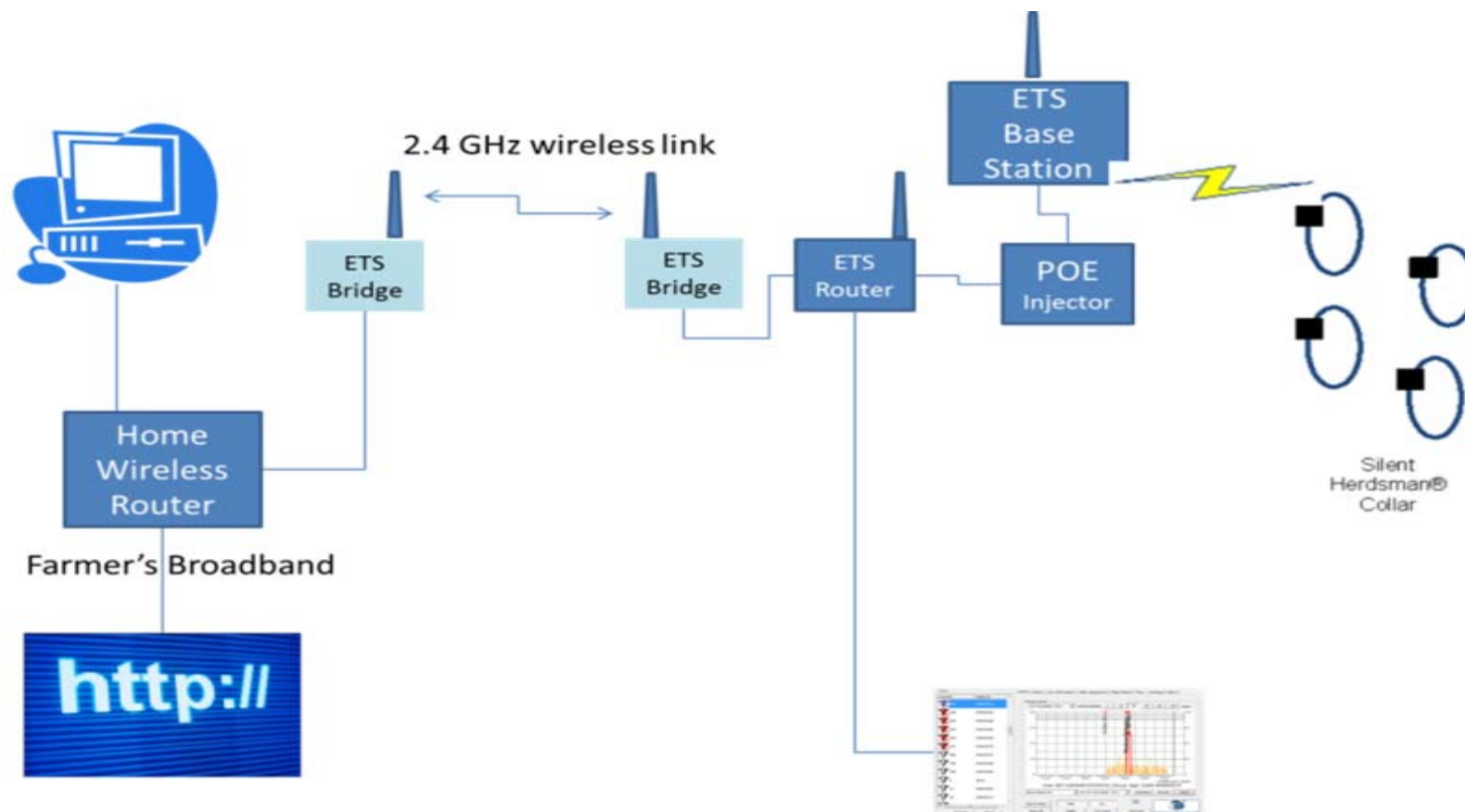   - **Connected to the Silent Herdsman PC**

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Remote Access

- Broadband Bridge
  - 1.5km Line-of-Sight

- **On-Farm WiFi**
  - **½ Broadband Bridge**

- **if a farm has an existing Wi-Fi network that can be utilised then only the wireless client router may be required, reducing the cost of installation**

- **wireless access points and client routers perform best with a direct line of sight to one another**

  - *500m range line-of-sight*

Silent Herdsman™

Enhanced Coverage

2.4 GHz wireless link

ETS Base Station

ETS Bridge

ETS Bridge

ETS Router

POE Injector

Home Wireless Router

Farmer's Broadband

http://

Silent Herdsman® Collar

The Future of Farming

Wireless Sensor Network , updating farmers with real data...in real time anywhere ,any country, any time !

Creating 24x 7 Animal Welfare Index.....using Condition Based Monitoring towards improved Asset Management.