



**GadgEon**  
Engineering Smartness



## Livestock Health Monitoring

\$5B lost annually to livestock disease. Customer needed real-time monitoring of livestock health for herds of up to 20K cattle.

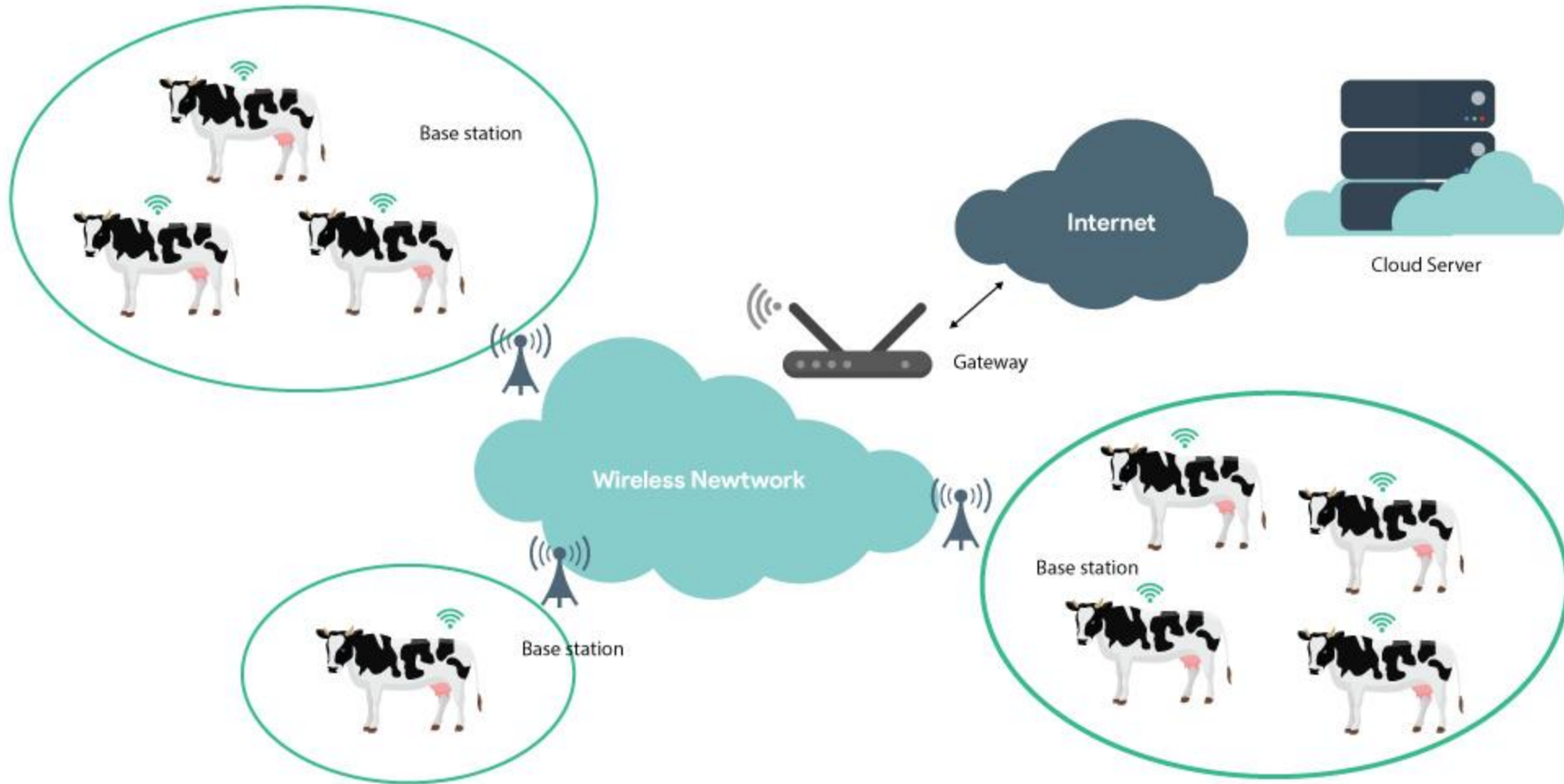
### Challenge

- Radio propagation issues
- Swift identification and location of diseased livestock

### Outcome

- Design of battery-operated implantable “e-Pill” and full-stack IoT implementation
- Livestock health index transmitted through mesh network to cloud via gateway
- Product currently deployed- in field trials in NE USA

# Livestock Health Monitoring – Data Flow Diagram



WHAT DID GADGEON DO?	PLATFORMS/ TECHNOLOGIES USED
Architecture, Design and Implementation Of Firmware	<ul style="list-style-type: none"><li>• State machine code, Acquiring sensor data using I2C, analog and digital IO</li><li>• Data analysis and vital parameter extraction</li><li>• Entering Low power mode when not active</li><li>• Wireless data transfer using TI CC1101 radio and SimpliciTI protocol stack</li><li>• Buffering data to the flash memory when the ePill is out of coverage area of Access Point</li><li>• Ability to roam among different Access Points</li><li>• Supports configuration and status extraction from Access Point using the SimpliciTI interface</li><li>• Receive data from the ePill, which is implanted in the cattle, using SimpliciTI wireless interface.</li><li>• Transmit the received data using RS-232 interface to the Base Station.</li><li>• Wireless data transfer using TI CC1101 radio and SimpliciTI protocol stack.</li><li>• The design is highly scalable supports up to 500 ePills at the same time.</li><li>• Basic status displays based on link availability, heartbeat mechanisms.</li></ul>



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